Five-Year Review Report

Second Five-Year Review Report

for

Master Disposal Landfill Site

City of Brookfield

Waukesha County, Wisconsin

September 2005

PREPARED BY:

Sheila A. Sullivan
U.S. Environmental Protection Agency
Chicago, Illinois

Approved by:

for Richard C. Karl, Director
Superfund Division

Date:

9/22/05

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Five-Year Review Report
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List of Acronyms

AOC	Administrative Order by Consent
ARAR	Applicable, Relevant and Appropriate Requirement
ATSDR	Agency for Toxic Substances and Disease Registry
AWQC	Ambient Water Quality Criteria
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CIC	Community Involvement Coordinator
City	City of Brookfield
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program (EPA-approved contract laboratories)
DCE	Dichloroethylene or Dichloroethene
FSP	Field Sampling Plan
EPA	United States Environmental Protection Agency
ES	Enforcement Standard (State of Wisconsin)
ESD	Explanation of Significant Differences
EW	Extraction Well
FCOR	Final Closeout Report - documents completion of Remedial Action
FR	Federal Register
FS	Feasibility Study
FY	Fiscal Year
GIS	Geographic Information System
HDPE	High-Density Polyethylene
IRIS	Integrated Risk Information System
MCL	Maximum Contaminant Level
mg/L	Milligrams per Liter or ppm
MW	Monitoring Well
NCP	National Contingency Plan
NPL	National Priorities List
NR	Natural Resources (as in "NR 140.28, WAC")
NRWQC	National Recommended Water Quality Criteria
O&M	Operation and Maintenance
ORC	Office of Regional Counsel (Region 5)
OSWER	Office of Solid Waste and Emergency Response
PALs	Preventive Action Limits
PCE	Perchloroethylene or Tetrachloroethylene
PCOR	Preliminary Closeout Report
ppb	Parts per billion or ug/L (water) and ug/kg (soil/sediment)
ppm	Parts per million, or mg/L (water) or mg/kg (soil/sediment)
PRPs	Potentially Responsible Parties
QAPP	Quality Assurance Project Plan

RA	Remedial Action
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act of 1976
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
RP	Responding Party
RPM	Remedial Project Manager (U.S. EPA)
SARA	Superfund Amendments and Reauthorization Act of 1986
SDWA	Safe Drinking Water Act
SEWRPC	Southeast Wisconsin Regional Planning Commission
SMCL	Secondary Maximum Contaminant Level
SOW	Statement of Work
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TBC	To Be Considered
TCE	Trichloroethylene
TCL	Target Compound List
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UAO	Unilateral Administrative Order
USGS	United States Geological Survey
VOC	Volatile Organic Compound
WAC	Wisconsin Administrative Code
WDNR	Wisconsin Department of Natural Resources

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Executive Summary

The Master Disposal Service Landfill Site ("MDSL Site" or "the Site")is an inactive industrial landfill located at 1990 West Capitol Drive (Wisconsin Route 190) in the Town of Brookfield, Waukesha County, Wisconsin (see site and location Figures 1-3). The City of Brookfield, a western suburb of the City of Milwaukee is about 3/4 miles east of the Site. The Site occupies a 40-acre parcel of land, of which 26 acres comprise a now inoperative landfill. During the fall of 1966, the Site was purchased by Master Disposal Incorporated and began its operation as the Master Disposal Service Landfill. The Site lies within the marshy flood plain of the Fox River and is bounded by Wisconsin Route 190 to the south, and otherwise is surrounded by privately owned parcels of wetlands and drainage channels. The Fox River is located approximately 300 feet to the west of the Site (see Figure 4).

After a careful evaluation of several alternatives, the United States Environmental Protection Agency (EPA) explained how the Site contamination would be addressed in the September 26, 1990 Record of Decision (ROD). Since the MDSL Site is situated in an environmentally significant wetlands, any aggressive groundwater restoration effort which could jeopardize the wetlands was unfeasible. As a result, EPA organized the work into two operable units (OUs). The first operable unit (OU1), was a Source Control Operable Unit prescribing containment of the waste mass with construction of a cap on the Site to prevent infiltration of water through the landfill.

A second operable unit (OU2) became necessary when it was believed that groundwater was in direct contact with the waste materials. The second OU prescribed controlling the migration of the contaminant plume via a groundwater containment system. Because this was an interim groundwater remedy, attainment of federal/state groundwater quality criteria throughout the aquifer was not a goal of OU2. Other components of the remedial action (RA) included installing a landfill gas venting system; extraction and treatment of contaminated groundwater; delineating wetlands/vegetation surrounding the site and undertaking further monitoring to determine impacts; and, implementing institutional controls including land and groundwater use and site access restrictions. The construction of the landfill cap was completed October 1994 and the groundwater extraction and treatment system was completed in May 1997 at which time the long-term groundwater remediation began.

The EPA is conducting this second site-wide five-year review of the RA for the Master Disposal Landfill Site, as mandated by Section 121(c) of CERCLA, and amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). The June 2001 guidance, *Comprehensive Five-Year Review Guidance,* OSWER No. 9355.7-03B-P, provides that EPA will conduct policy reviews no less often than five years at sites where a remedial action, upon completion, will not leave hazardous substances, pollutants or contaminants on site above levels that allow for unlimited use and unrestricted exposure but will require more than five years to complete.

The trigger for this policy second five-year review was the completion date (September 25, 2000) of the first five-year review for the Site. The first five-year review concluded that the remedy was executed in accordance with the requirements of the ROD. The groundwater extraction system was operating properly and the landfill cap was well-maintained. The potentially responsible parties (PRPs) conducted monthly maintenance inspections, chemical monitoring, and the necessary maintenance as needed. The remedy was assessed to be protective of human health and the environment. The report recommended that the PRPs continue operation and maintenance of the groundwater extraction system and that EPA and the PRPs continue to evaluate the data and the effectiveness of extraction wells and systems to ensure that the remedy is containing contaminants onsite.

Since the last five-year review, the PRPs requested that the extraction system be shutdown on a probationary basis for one year with appropriate monitoring during and after the shutdown. Results showed the presence of benzene in a shallow well, at which time, monthly monitoring was conducted to demonstrate whether the levels of benzene are stable. The PRPs have since requested a permanent shutdown of the extraction system and the adoption of a quarterly monitoring schedule for benzene.

Because pertinent federal/state groundwater restoration criteria are not currently in place, a decision by EPA and WDNR with regard to permanently shutting down the groundwater extraction system would be premature. It is first necessary to produce a decision document that states the groundwater restoration criteria and the method for determining the time frame and how cleanup criteria can be met in conjunction with other measures of monitoring and extraction system operation. EPA will be making such a determination.

The data collected and evaluated during this second five year review indicate that until the probationary shutdown began, the implemented portion of the remedy extracted and treated contaminated groundwater according to design. The remedy is expected to remain functional in the future or as long as is needed, as determined by EPA.

In August 2005, the PRPs conducted an institutional controls study as per EPA's request. To date, no deed restrictions have been put in place to restrict access to and use of the Site and the surrounding property for any purposes that may potentially impair the effectiveness of the remedy. The prior Site owner, who granted access to EPA to oversee the remedy and to the PRPs to conduct the remedy, is deceased. EPA, with anticipated cooperation from the PRPs and input from the WDNR, will develop a strategy and implementation time frame in order to put in place institutional controls for groundwater and site use.

Operation and maintenance activities have been generally effective and are ongoing as prescribed in the RA Statement of Work. This includes groundwater and effluent monitoring until such time as the data indicate it is no longer necessary. Evaluation of the effectiveness of the remedy will continue during future five-year reviews until contamination and/or its associated risks are no longer present in the Site groundwater.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name *(from WasteLAN)*: Master Disposal Landfill Site		
EPA ID *(from WasteLAN)*: WID980820070		
Region: 5	**State:** WI	**City/County:** Brookfield/ Waukesha County
SITE STATUS		
NPL status: ☒ Final ☐ Deleted ☐ Other (specify)		
Remediation status (choose all that apply): ☐ Under Construction ☒ Operating ☐ Complete		
Multiple OUs?* ☒ YES ☐ NO	**Construction completion date:** 05/16/1997	
Has site been put into reuse? ☐ YES ☒ NO		
REVIEW STATUS		
Lead agency: ☒ EPA ☐ State ☐ Tribe ☐ Other Federal Agency		
Author name: Sheila A. Sullivan		
Author title: Remedial Project Manager	**Author affiliation:** U.S. EPA, Region 5	
Review period:** 02/08/2005 to 09/25/2005		
Date(s) of site inspection: 04/19/2005		
Type of review: ☒ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only ☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead ☐ Regional Discretion		
Review number: ☐ 1 (first) ☒ 2 (second) ☐ 3 (third) ☐ Other (specify)		
Triggering action: ☐ Actual RA Onsite Construction at OU #_____ ☐ Actual RA Start at OU#____ ☐ Construction Completion ☒ Previous Five-Year Review Report ☐ Other (specify)		
Triggering action date *(from WasteLAN)*: 09/25/2000		
Due date *(five years after triggering action date)*: 09/25/2005		

* ["OU" refers to operable unit.]
** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form, cont'd.

Issues:

1. Determine the appropriate decision document (ROD v. ROD amendment) for setting cleanup criteria and the strategy for setting remedial action cleanup criteria for OU2 (groundwater). Consult with WDNR on cleanup criteria
2. Groundwater contaminant trend criteria must be completed to determine the groundwater restoration time frame.
3. Determine the feasibility and protectiveness of shutting down the groundwater extraction/treatment system on an extended probationary or permanent basis.
4. Fully assess the status of ICs at the Site and determine IC implementation strategy and whether current and future land classifications are appropriate
5. Determine the status of private residential well use and water quality downgradient of the Site.

Recommendations and Follow-up Actions:

1. Discussions with ORC indicate either a ROD or ROD Amendment is appropriate. Continue review of decision document criteria. Review options for cleanup criteria and discuss with WDNR.
2. Send data format criteria to current PRP consultant so data can be provided to EPA from 2002-2005. EPA contractor will integrate all data and provide analyses to RPM.
3. Review trend analyses as per previous issue and discuss with WDNR.
4. PRP-prepared IC study, submitted 8/2005, indicates no deed restrictions are filed. Meet with ORC and PRPs to develop strategy and implementation time frame.
5. Obtain information from federal, state and county water supply data bases regarding existence and groundwater quality of private wells.

Protectiveness Statement(s):

The source control remedy at OU1 currently protects human health and the environment in the short-term because the landfill cap has been constructed and maintained according to the specifications in the 1992 consent decree and all referenced EPA-approved design documents and criteria. The extracted and discharged groundwater meets ARARs, thereby demonstrating the effectiveness of the waste containment system. Site access is restricted by a perimeter fence and three locked gates; however, in order for the remedy to be protective in the long-term, the ICs, specified in the ROD, must be fully implemented. The ICs included Site access and deed restrictions on land and groundwater use.

OU2 is an interim groundwater remedy to control plume migration via groundwater containment. As such, there is no decision document assigning groundwater cleanup criteria with which to assess its effectiveness. When state and federal groundwater/drinking water quality criteria are compared to monitoring data, the extraction system appears effective. Some contaminants are present in excess of groundwater quality criteria but would not be expected to be present in downgradient private wells due to the distance of these wells from the Site, natural attenuation, and the slow movement of groundwater. Hence, though it is currently unlikely that there are exposures which would present a risk to human health, this has not been confirmed via monitoring data. Thus, a protectiveness determination for OU2 cannot be made until the groundwater analyses are completed and/or the closest downgradient private wells are identified and tested for the COCs. These actions will take approximately two months to complete, at which time a protectiveness determination can be made. In any case, in order for OU2 to be protective in the long-term, the site-wide ICs, must be implemented. Further, a plan for monitoring and enforcing the ICs must be developed to ensure long-term protectiveness.

Other Comments:

None.

Five-Year Review Report

I. Introduction

The purpose of five-year reviews is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of such reviews are documented in the site-specific five-year review reports. In addition, five-year review reports identify issues or deficiencies, if any, found during the review process for the site, and provide recommendations to address or correct them.

The United States Environmental Protection Agency (EPA) is preparing this site-wide five-year review pursuant to CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The EPA interpreted this requirement further in the National Contingency Plan (NCP); 40 CFR §300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

The EPA, Region 5 has conducted a site-wide five-year review of the remedial action (RA) implemented at the Master Disposal Service Landfill Site in Brookfield, Wisconsin (the "Site"). This review was conducted for this Site from April 2005 through September 2005 by the EPA Remedial Project Manager (RPM), with assistance from the Wisconsin Department of Natural Resources (WDNR). This report documents the results of the review. As part of this review, the RPM reviewed all data collected under the regular monitoring under operation and maintenance (O&M) for the Site to evaluate the current Site status.

This is the second such site-wide five-year review for the Master Disposal Services Landfill Site. The first five-year review was completed on September 25, 2000; the triggering

action for that policy review was the completion date of the Preliminary Close Out Report (PCOR) of June 19, 1997, as documented by EPA's WasteLAN database. EPA's policy changes for consecutive reviews re-set the due date for this second review to five years from the completion date of the first review, that is September 25, 2000. Hence, the due date is September 25, 2005. This policy five-year review was specifically activated by the presence of hazardous substances, pollutants and contaminants remaining at the Site above levels that allow for unlimited use and unrestricted exposure. The RA will require more than five years to complete; however, upon its completion, the hazardous substances, pollutants and contaminants will be remediated to allow for unlimited use and unrestricted exposure.

II. Site Chronology

TABLE 1 - CHRONOLOGY OF SITE EVENTS

Event	Date
Site operated as unlicensed disposal facility. In the fall of 1966, the Site was purchased by Master Disposal, Inc.	prior to 1966
Master Disposal, Inc. operated the landfill which accepted industrial and non-industrial solid wastes and drummed liquids.	1967 to 1982
WDNR received legislative authority to regulate solid waste facilities. WDNR did not license the landfill due to its poor (swampy) location, but routinely inspected it.	April 1967
WDNR discovers the disposal of industrial wastes during a Site inspection.	August 1973
WDNR performs about 19 Site inspections confirming the disposal of hazardous waste at the Site.	December 1976 to August 1977
Warzyn Engineering assesses the feasibility of continued disposal for MDS, Inc. and recommends a phased abandonment of Site. Buried and ruptured drums uncovered during Site soil excavation.	June 1977
WDNR and Wisconsin DOJ enter into an agreement with MDC stipulating the issuance of a license for Site abandonment within 2.5 years.	August 1977
The MDSL Site began a phased closure, accepting only the ash from burned wood wastes. Complete closure of the Site occurred by 1985.	1982 - 1985
Site proposed for National Priority List (NPL)	September 8, 1983

TABLE 1 - CHRONOLOGY OF SITE EVENTS

Event	Date
Site finalized on NPL	September 21, 1984
Administrative Order by Consent (AOC) signed between PRPs, EPA and WDNR compelling PRPs to conduct the Remedial Investigation/Feasibility Study (RI/FS)	June 19, 1986
RI/FS undertaken	June 19, 1986 to September 26, 1990
Record of Decision signed	September 26, 1990
AOC entered between PRPs, EPA and WDNR compelling PRPs to conduct Remedial Design/ Remedial Action (RD/RA)	January 30, 1992
EPA and WDNR approve the RD/RA Work Plan	April 14, 1992
EPA and WDNR approve the final RD Package for the landfill cap	March 29, 1994
RA Phase I involving construction of landfill cap	April 1994 to October 1994
EPA approves the final RD package for Phase II involving groundwater pump and treat system	July 29, 1996
RA Phase II involving construction of groundwater pump and treat system	July 1996 to October 1996
Monitoring plans for groundwater, surface water, wetlands and landfill gas were finalized	July 1996
Site-wide RA construction completed and start of long-term groundwater remediation	May 16, 1997
Preliminary Closeout Report signed signifying construction completion of landfill cap and groundwater system	June 19, 1997
PRPs submit two-year monitoring evaluation to EPA and WDNR recommending reduced groundwater monitoring frequency from quarterly to annually	May 6, 1999
1st Five-Year Review Report completed	September 25, 2000
EPA and WDNR approved the elimination of landfill gas monitoring for the Site as per the May 6, 1999 Two-Year Evaluation Report.	January 18, 2000

TABLE 1 - CHRONOLOGY OF SITE EVENTS

Event	Date
EPA and WDNR approved the elimination of annual vegetation surveys of the wetlands from the annual monitoring program	September 12, 2000
EPA and WDNR approved a probationary shutdown of the groundwater extraction system and revisions to the ongoing monitoring program	June 3, 2004
2nd Five-Year Review Site Inspection	April 19, 2005
PRPs submitted request for permanent shutdown of the groundwater extraction system and revisions to the ongoing monitoring program	May 6, 2005
Public notification of 2nd five-year review	May 26, 2005
2nd Five-Year Review Report completed	September 25, 2005

III. Background

Physical Characteristics

The Master Disposal Service Landfill Site ("MDSL Site" or "the Site") is an inactive industrial landfill located at 19980 West Capitol Drive (Wisconsin Route 190) in the Town of Brookfield, Waukesha County, Wisconsin (see site and location Figures 1-3). The City of Brookfield, a western suburb of the City of Milwaukee is about 3/4 miles east of the Site. The Site occupies a 40- acre parcel of land, of which 26 acres of land comprise a now inoperative landfill. During the fall of 1966, the Site was purchased by Master Disposal Incorporated and began its operation as the Master Disposal Service Landfill. The Site lies within the marshy flood plain of the Fox River and is bounded by Wisconsin Route 190 to the south, and otherwise is surrounded by privately owned parcels of wetlands and drainage channels. The Fox River, which flows into Illinois, is located approximately 300 feet to the west of the Site (see Figure 4).

The land filling operations at the Site have created a raised plateau, confined by perimeter berms, that is surrounded by flat-lying lowlands. The MDSL Site lies within a primary environmental corridor. The Southeastern Wisconsin Regional Planning Commission (SEWRPC) defines those areas in southeast Wisconsin with the highest concentrations of natural, recreational, historic, and scenic resources as "environmental corridors." A primary environmental corridor is further defined as being at least 400 acres in size, two miles in length, and 200 feet in width. Resources contributing to the area's ranking as a primary environmental corridor include the Fox River, the wetlands, and wildlife habitat areas. There are no known

records of endangered or threatened animal or plant species in or surrounding the Site area.

The Site overlies a surficial sand/gravel and dolomite aquifer system, which has been contaminated by onsite disposal activities. The stratigraphy at the Site (underlying the original cover material, landfill debris, and surface sediments) is heterogeneous with alternating clay, silt, and sand lenses.

Groundwater at the Site flows primarily to the south-southwest toward the Fox River through both a shallow aquifer system composed of glacial deposits and dolomite bedrock, and a deeper, confined system composed of sandstone. The shallow aquifer system is comprised of the following two aquifer units: the sand and gravel aquifer unit (containing the A1 zone and the A2 zone) in the glacial drift; and, the Niagara aquifer unit (referred to as the A3 zone) within the Niagara dolomite. The Maquoketa shale aquitard lies between the Niagara dolomite and the deeper, confined sandstone aquifer.

The A1 zone of the sand and gravel system is continuous at the top portion of the aquifer system. In Zone A1, the groundwater flow velocity is estimated to be from 9-30 feet per year. At the lower portions of the sand and gravel system the aquifer is discontinuous. These discontinuous portions of the shallow aquifer system comprise the A2 zone and appear to be limited to the southeastern corner of the Site. Although the A2 zone is in the shallow aquifer system, it is often referred to as the "intermediate zone". The groundwater flow velocity in Zone A2 is estimated at 1-2 feet per year. The relationship between the A1, A2, and A3 zones is depicted in Figure 5.

The water-bearing sediments vary in thickness and lateral extent. Contacts between the layers appear to be gradational rather than distinct. The A1 and A2 zones of the shallow aquifer system begin at 15 and 35 feet, respectively, below the ground surface. The A3 zone deep aquifer system begins at approximately 55 feet below the ground surface. Groundwater velocity in Zone A3 is less than 1 foot per year.

The population of the area immediately surrounding the landfill (census tract 2008) includes about 13,542 people as of the 2000 census, and the area is experiencing rapid growth (see Figure 6). Of the total, approximately 8,092 persons are residents of the City of Brookfield. The City of Brookfield is a western suburb of Milwaukee and is a heavily urbanized area located approximately 3/4 mile east of the Site. The nearest residential well is approximately one mile to the south of the Site. Over 2,350 persons have been estimated to be served by private wells within a 3-mile radius east of the Fox River (see Figure 7). The City of Brookfield covers 26 square miles with a total population of about 39,000 as of the 2000 census.

The City of Brookfield water utility supplies drinking water to about 63% of the residents of Brookfield proper (see Figure 8). Consisting of 23 wells, five towers, six reservoirs and nine booster stations, its capacity is about 4.0 million gallons per day (MGD). Ten of the City wells are located within a three-mile radius of the Site. A number of the City wells draw from the same Fox River aquifer underlying the Site. The water utility is actively drilling for new wells on the

south side of the City. The Town of Brookfield water supply (Sanitary District No. 4) consists of six wells drawing from the shallow dolomite aquifer. The District provides the Town with 1.2 MGD of water, though none of the Town water supply lines reach the Site vicinity. All water supplies in the Site area are from separate wells. The Fox River Water Pollution Control Center provides sanitary sewerage service to Brookfield and adjacent communities.

Land Resource Use

The Site sits near the northwest corner of the City of Brookfield. The land use in this area is currently semi-rural mixed use land and includes commercial, residential, and light industrial uses. The Site is immediately surrounded by a conservancy area with abundant wetlands and drainage areas for the Fox River and Sussex Creek. These wetlands comprise the majority of land around the Site and fall within the 10-year flood line. Hence, it is unlikely that any future development could occur within the immediate landfill vicinity. Several parks, including Mitchell Park (433 acres), Fox Brook Park (swimming/recreation), McCoy Field (19 acres) and Beverly Hills Park (23 acres), are located just south of the Site and Highway 190. Capitol Drive Airport, a small regional aviation center, is about ½ mile southwest of the Site. Other nearby facilities include Gateway West Commerce Center (193-acre industrial park), Sharon Lynne Wilson Art Center, Brookfield Soccer Park (50 acres), Vincent Park Office Center, and Towne Center (residential, office, and retail center). These facilities and land use are shown in Figures 9 and 10.

The overall area is expected to continue growing and several plans have been developed for the neighborhoods along the Capitol Drive corridor. The closest such plan to the MDSL Site involves the Brookfield Road and Capitol Drive Neighborhood Plan. This intervention seeks to develop a pedestrian focused mixed-use development at the southwest quadrant of Brookfield and Capitol, with larger buildings oriented to Capitol Drive. The plan will use the wetlands and environmental corridors for both private development and public use. Further it will develop multi-family housing to bridge commercial development and the neighborhood (see Figure 11). The 40-acre property parcel itself is classified by the County of Waukesha as undeveloped or open land, however; the 0.61 acre sub-parcel of this property fronting Capitol Drive is zoned as residential, although it is not currently used as such. The County land use plan for 2010 is to have low density residential land use of this small portion of the property. In addition, a small crescent -shaped swath of land on the southwest side of the landfill appears to be planned for low-density residential land use as well. Immediately east of the landfill is a parcel of land currently a wetland which is planned for recreational use. The remainder of land parcels immediately surrounding the property are wetlands and defined as environmental corridors (see Figure 12).

History of Contamination

The MDSL Site was operated from 1967 until 1982 when it was partially closed. At that time, wastes no longer were received for disposal with the exception of wood wastes which were burned in a controlled air-pit burner known as an air curtain destructor. The ash from this

operation was disposed of onsite. During the active life of the landfill (1967-1982), disposal of industrial and non-industrial solid wastes and drummed liquids and solids occurred onsite. During the fall of 1966, the Site was purchased by Master Disposal, Inc. and began its operation as MDSL. Waste was initially accepted in 1967.

In April 1967, after the Wisconsin Department of Natural Resources (WDNR) received legislative authority to regulate solid waste facilities, the WDNR inspected the MDSL facility. At that time, the WDNR noted that the Site was located entirely in a swampy, peat area. The WDNR subsequently advised Master Disposal, Inc. maintain adequate diking around the Site. The WDNR also chose at that time not to license the Site due to its suboptimal setting. The WDNR routinely inspected the Site during its years of operation.

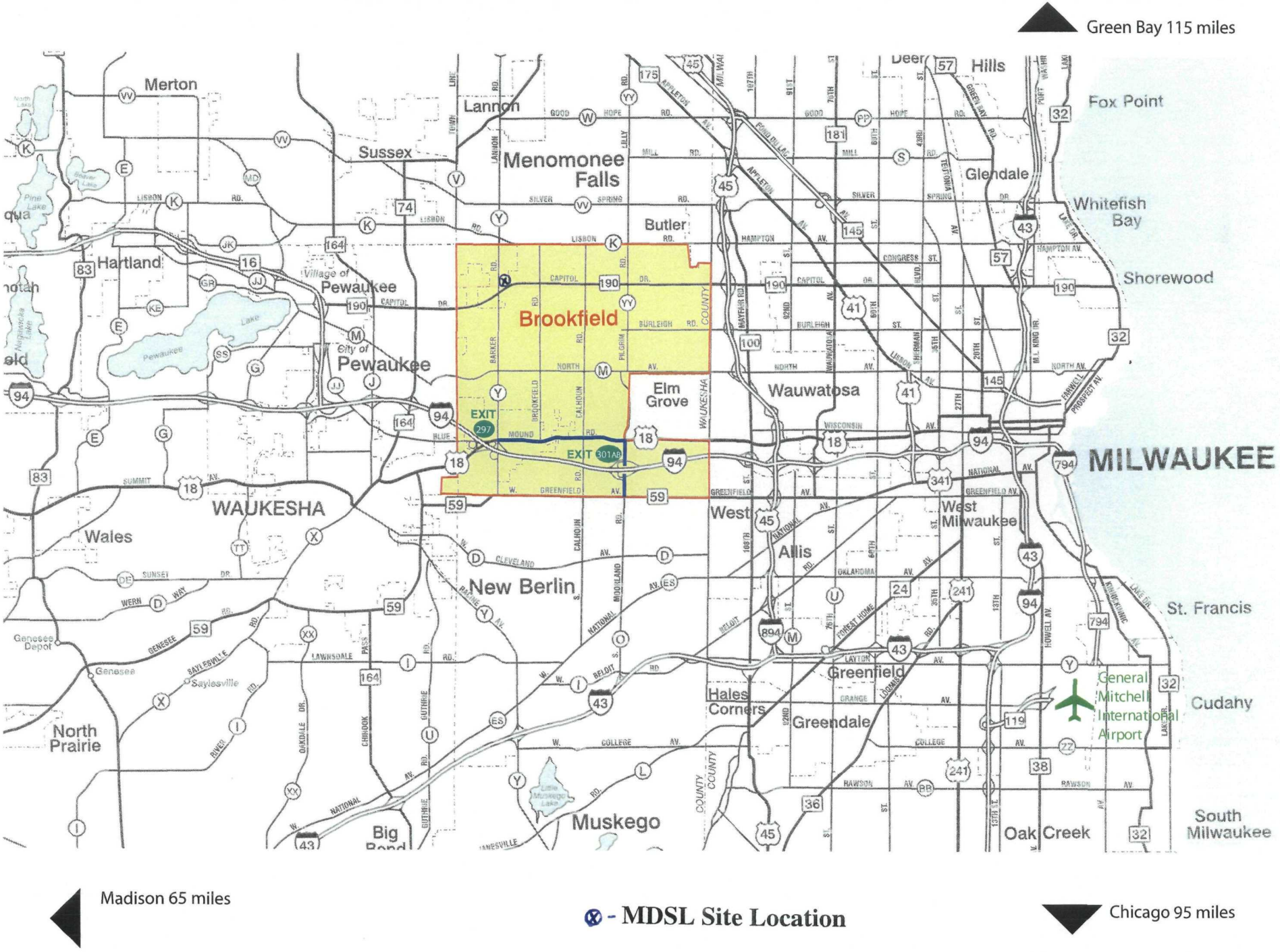
A WDNR inspection in August 1973, indicated that the onsite operations consisted primarily of industrial waste disposal. Foundry sands and slags constituted the largest class of wastes accepted for disposal. Some evidence of hazardous waste (including solvents, paints, adhesives, oils, sludges and other industrial compounds) reportedly was present at the Site. Based on 104(e) responses and EPA and WDNR estimates, about 1,416,000 cubic yards of waste, including estimates of over 1.5 million gallons of industrial wastes, were disposed of at the Site between 1967 and 1982. The non-industrial waste consisted of general debris including service station waste, plastic, metal, paper, wood, tires, construction material, and miscellaneous garbage. The depths of the waste within the landfill varied from 10-25 feet.

Initial Response

The WDNR performed approximately 19 inspections of the MDSL Site during the period from December 1976, though August 1977. The inspections generally consisted of visual observations of disposal operations in the industrial waste disposal area, wood burning area, refuse disposal area, and salvage area. Most WDNR inspection reports noted that hazardous substances were being accepted. A summary report of the WDNR site inspections noted that operational violations included the following: continuous open burning; inadequate waste covering; lack of surface water drainage; acceptance of some hazardous wastes; and, the deposition of waste materials directly into ponded waters.

Under contract to the Site owner, Warzyn Engineering, Inc. completed a study in June 1977, which assessed the hydrogeologic and geotechnical feasibility of continued disposal operations at MDSL. Warzyn recommended a phased abandonment over time based on the poor site setting, potential increase of contaminants to ground and surface waters, lack of onsite borrow materials, and difficult operating conditions.

In August 1977, the WDNR and the State Department of Justice (DOJ) entered into a stipulated agreement with Master Disposal Corporation. As a result, a State license was issued; however, the agreement called for site abandonment within 2-1/2 years as well as the development of a groundwater monitoring program at the Site. The owner/operator attempted to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Merton
Lannon
Sussex
Menomonee Falls
Deer Hills
Fox Point
Glendale
Whitefish Bay
Shorewood
Butler
Hartland
Village of Pewaukee
City of Pewaukee
Brookfield
Elm Grove
Wauwatosa
MILWAUKEE
EXIT 297
EXIT 301AB
WAUKESHA
Wales
New Berlin
West Allis
West Milwaukee
St. Francis
Cudahy
General Mitchell International Airport
Greenfield
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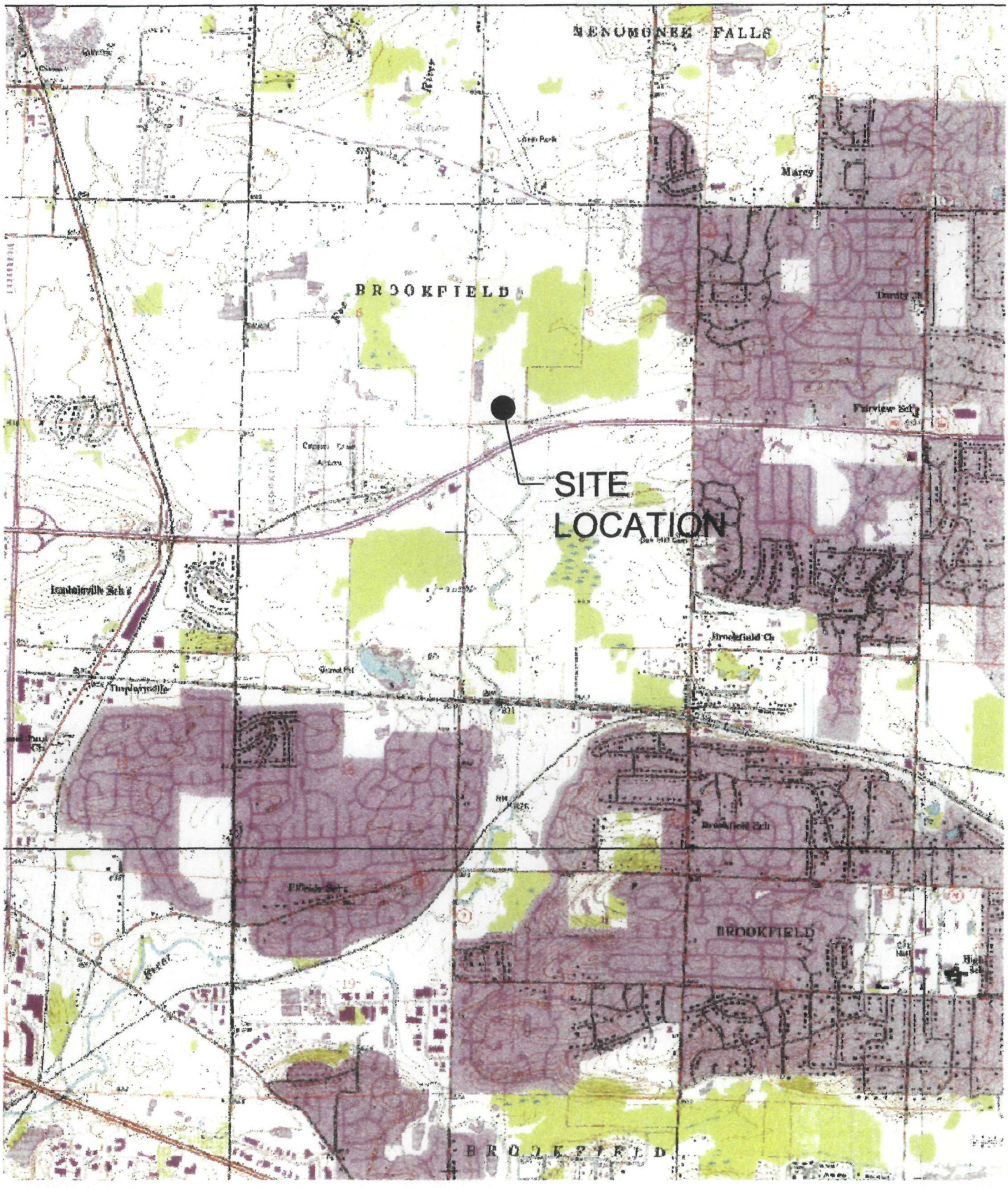
North Prairie
Muskego
Oak Creek
South Milwaukee
Madison 65 miles
⊗ - MDSL Site Location
Chicago 95 miles

Figure 1

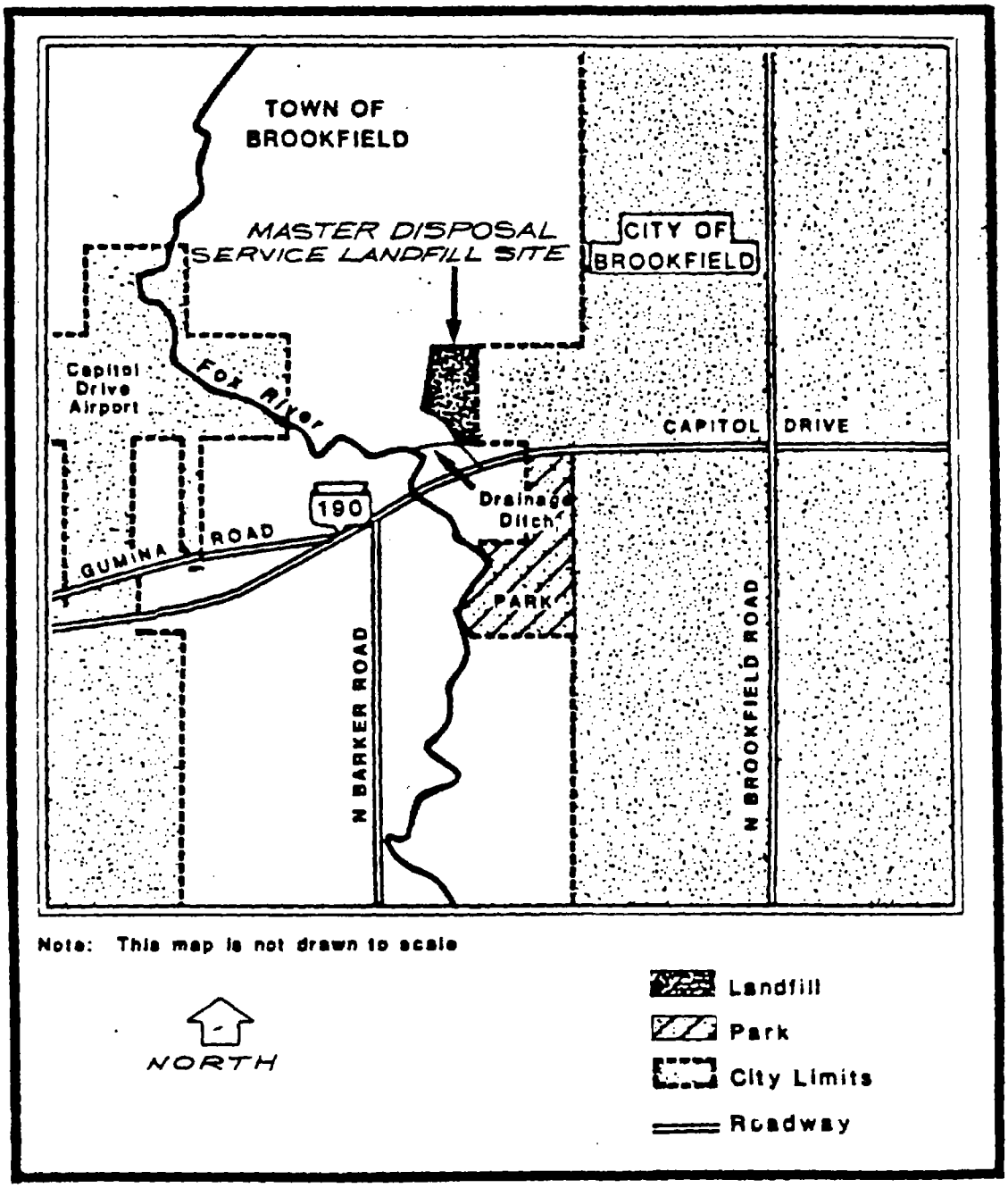


STS CONSULTANTS
11425 W. Lake Park Drive
Milwaukee, WI 53224
414-359-3030
www.stsconsultants.com

SITE LOCATION
MASTER DISPOSAL SERVICE LANDFILL SITE
BROOKFIELD, WISCONSIN

Figure 2

X:\Projects\587588XA\dwg\G87588XA-SITE01.dwg, 5/6/2005 11:54:12 AM, heintz

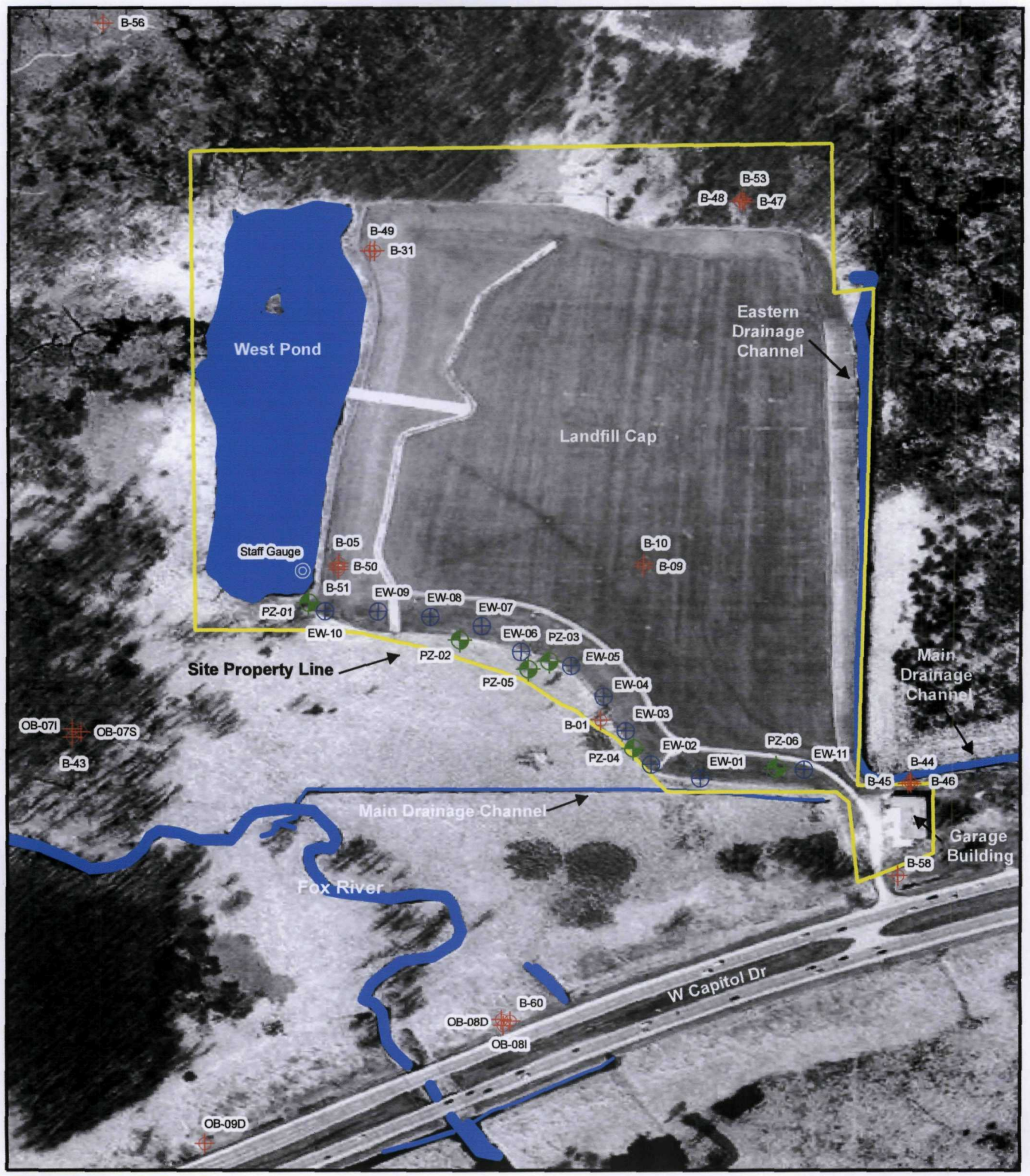


MASTER DISPOSAL SERVICE LANDFILL
SITE VICINITY MAP

JANUARY, 1986

Figure 3

Master Disposal Service Landfill Superfund Site
Well Locations



Legend

- Extraction Well
- Piezometer
- Monitoring Well
- Staff Gauge

0 75 150 300 450 600 Feet

N

GEOS
Groundwater Evaluation and Optimization System

Figure 4

Created by Sarah Backhouse U.S. EPA Region 5 on 9/12/2005

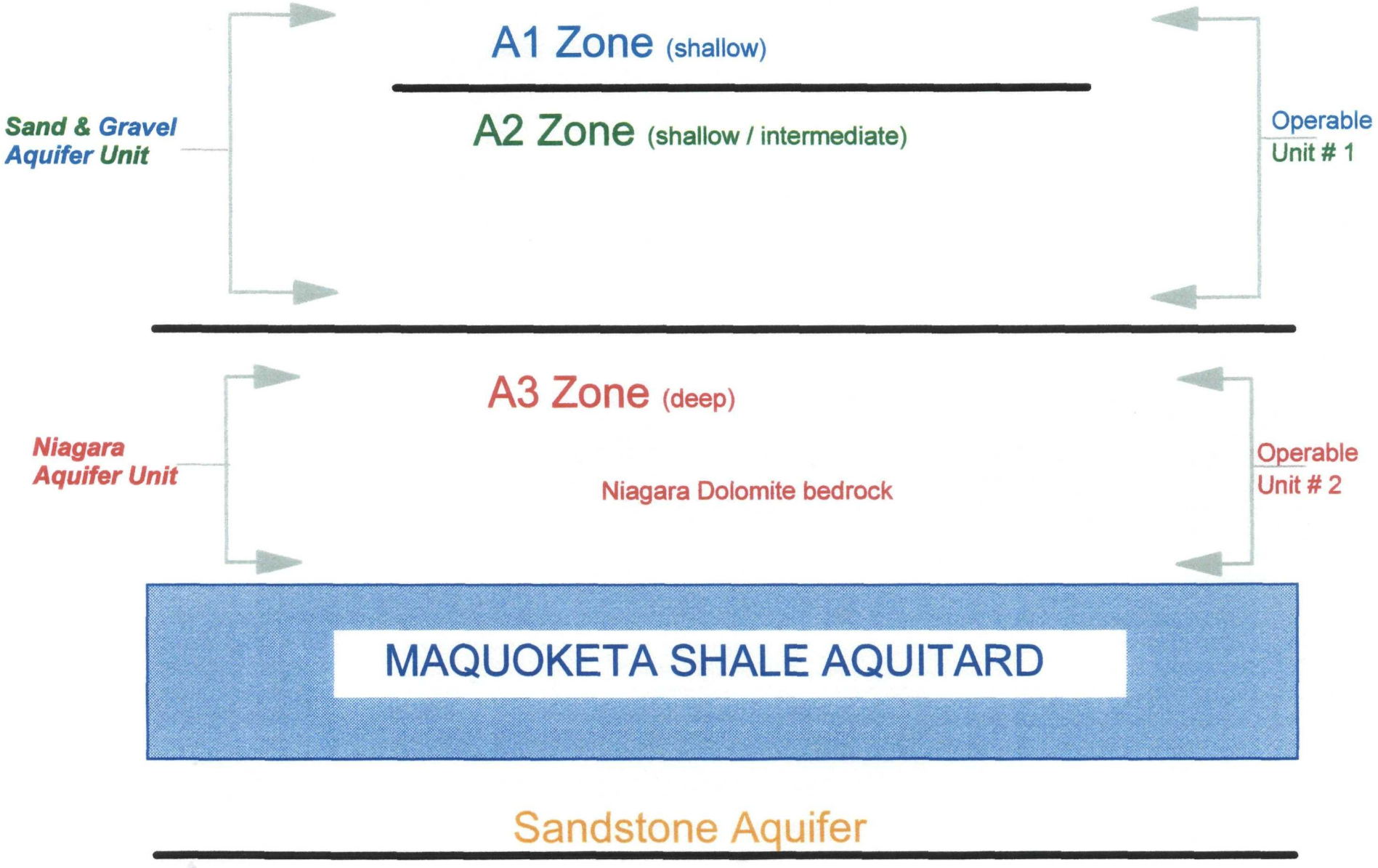
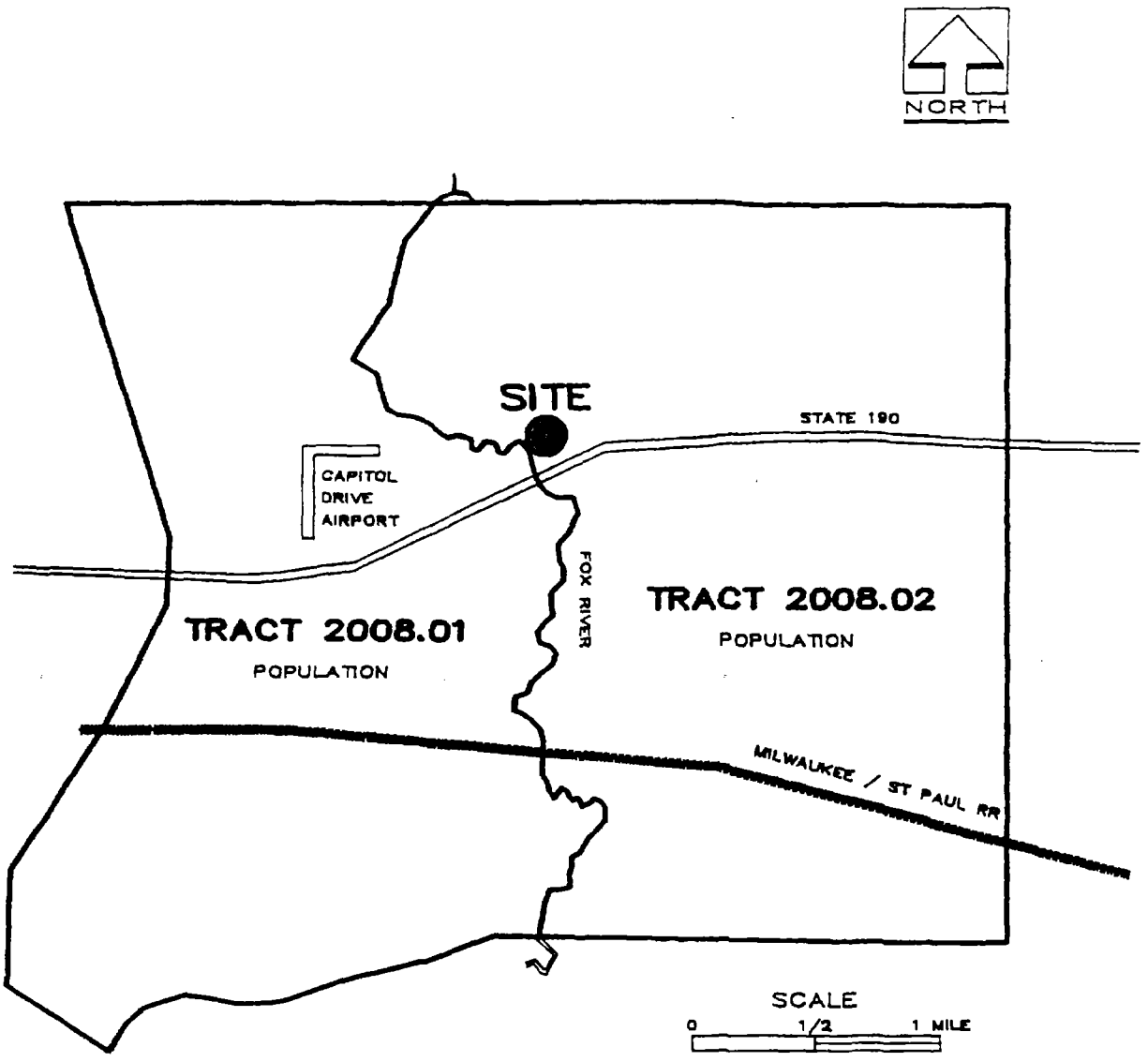


Figure 5

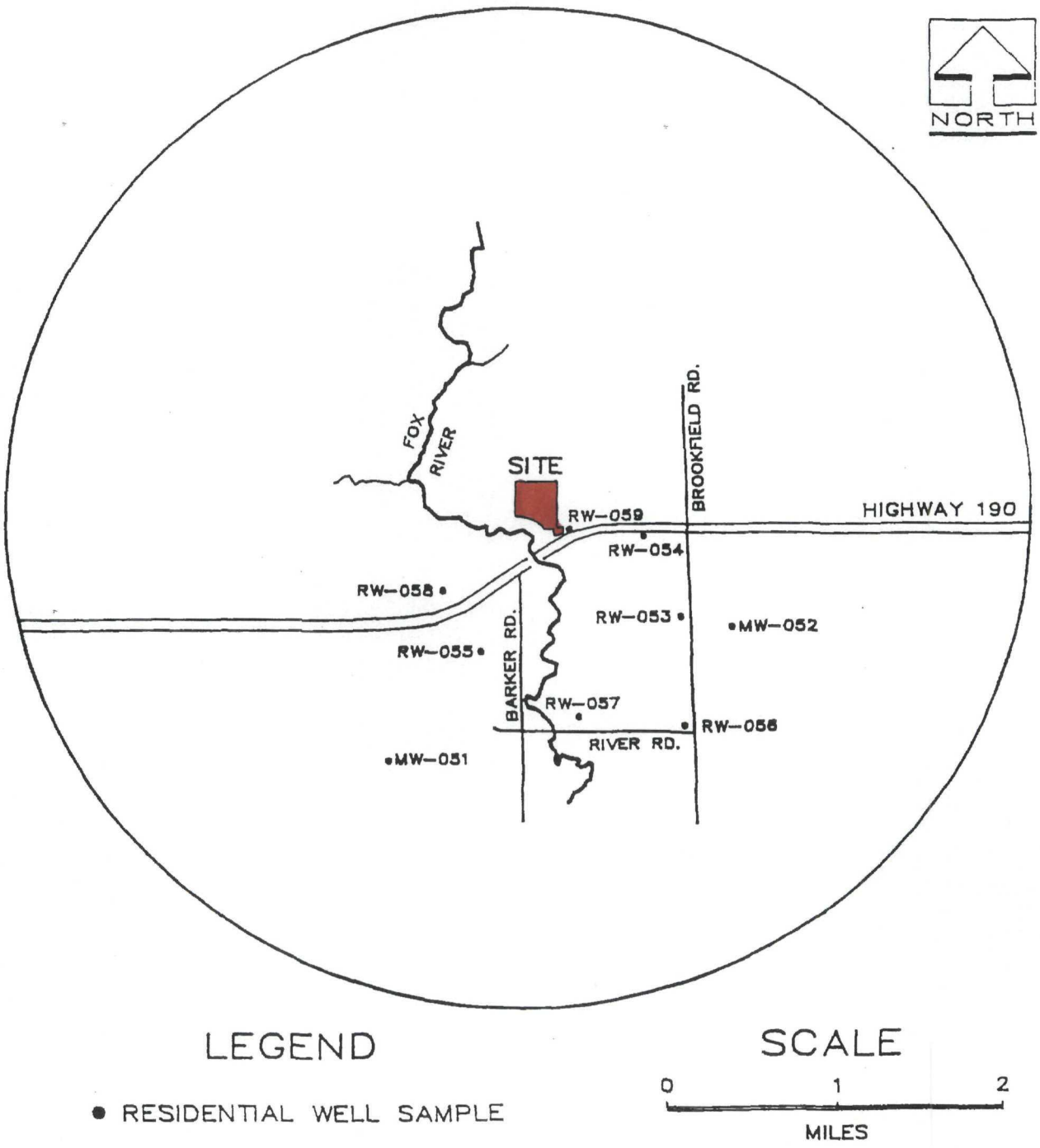
Figure 5- Simplified Diagram of Groundwater Systems at the Master Disposal Service Landfill Site



Master Disposal Service Landfill

Figure 6

CENSUS TRACT MAP



Master Disposal Service Landfill

Figure 7

Residential and Municipal Well Locations

CITY OF BROOKFIELD
WATER SYSTEM MAP

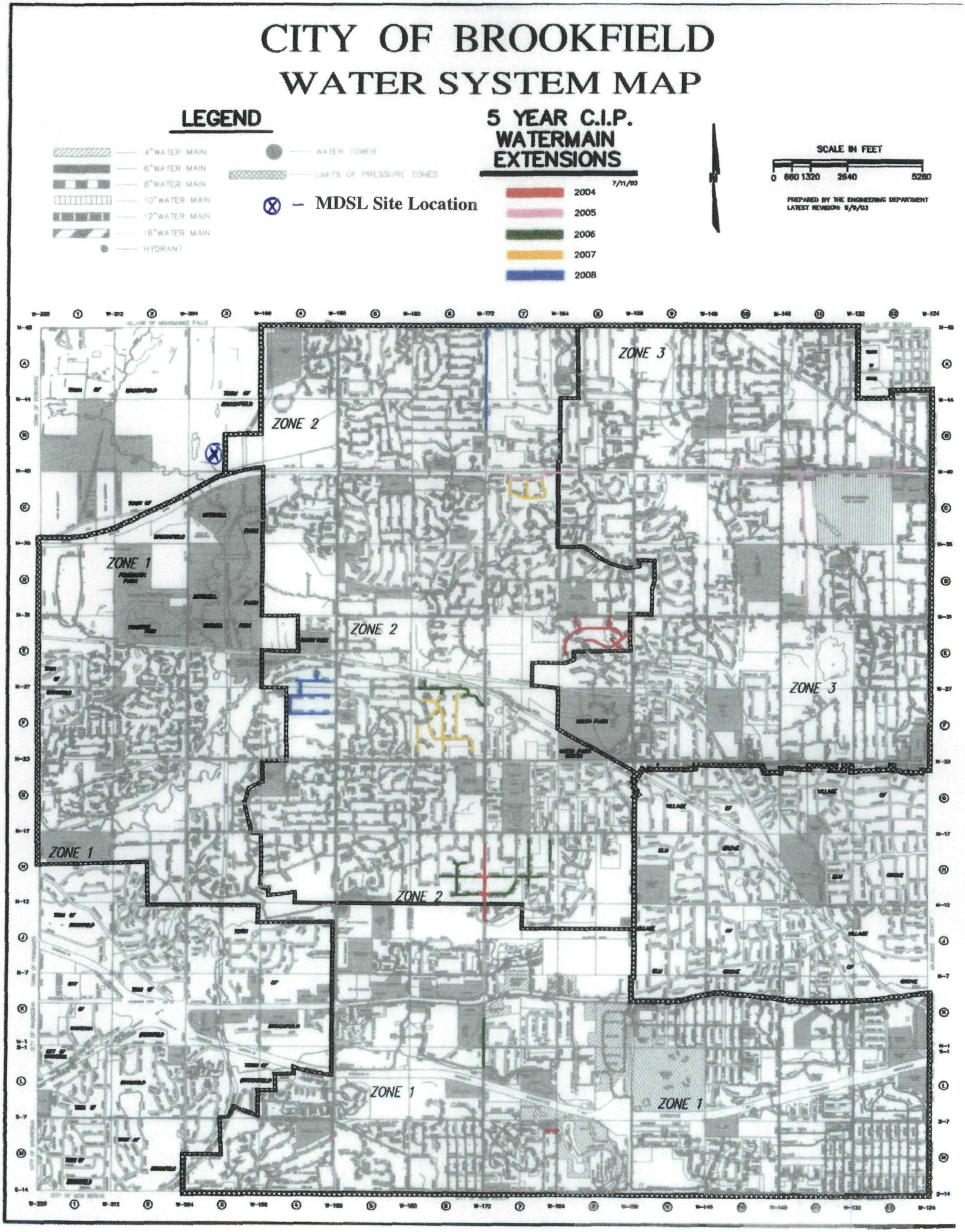
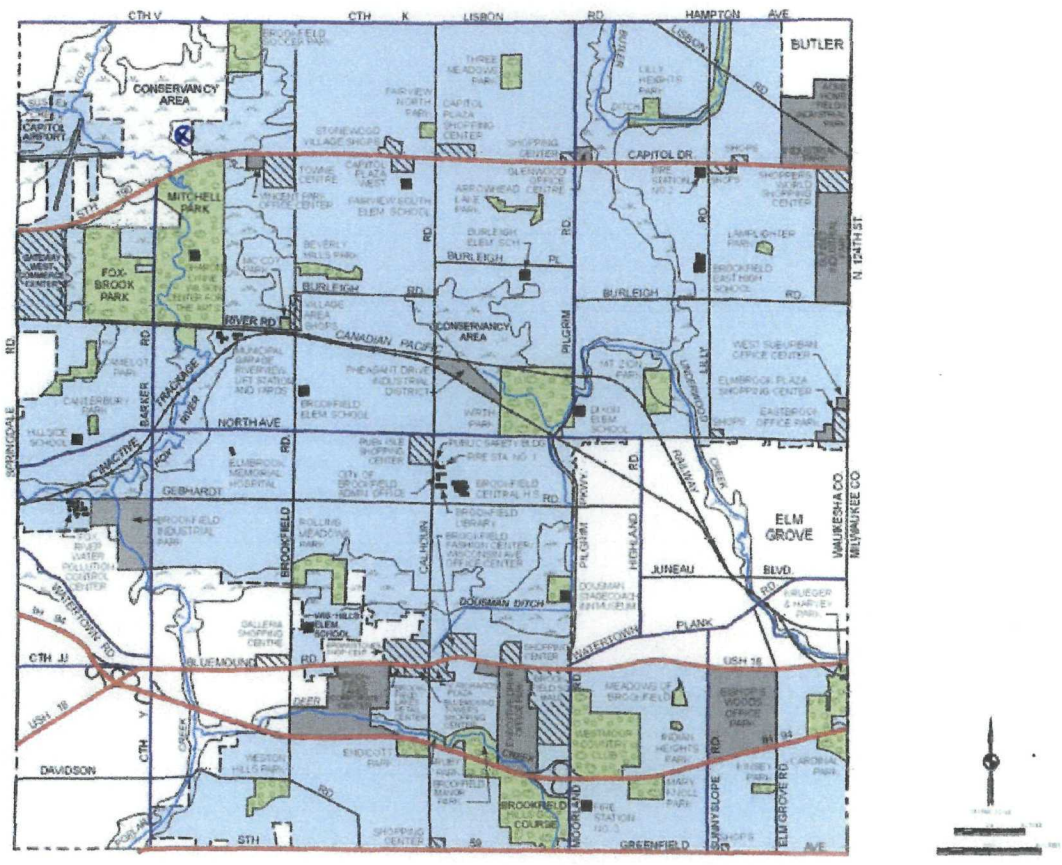


Figure 8

City of Brookfield



⊗ - MDSL Site Location

Source: SEWRPC

Local Contacts

For industrial, commercial, or business information about the City of Brookfield, contact:

- Mayor
  City of Brookfield
  2000 North Calhoun Road
  Brookfield, Wisconsin 53005
  Telephone: (262) 782-9650
  Facsimile: (262) 796-6671
  Web Site: www.ci.brookfield.wi.us

- Economic Development Coordinator
  City of Brookfield
  2000 North Calhoun Road
  Brookfield, Wisconsin 53005
  Telephone: (262) 796-6694
  Facsimile: (262) 796-6702

- Executive Director
  Greater Brookfield Chamber of Commerce
  1305 North Barker Road, Suite 5
  Brookfield, Wisconsin 53045
  Telephone: (262) 786-1886
  Facsimile: (262) 786-1959

- Executive Director
  Brookfield Convention & Visitors Bureau
  17100 West Bluemound Road, Suite 203
  Brookfield, Wisconsin 53045
  Telephone: (262) 789-0220
  Facsimile: (262) 789-0221

- President
  Waukesha County
  Economic Development Corporation
  892 Main Street, Suite D
  Pewaukee, Wisconsin 53072
  Telephone: (262) 695-7901
  Facsimile: (262) 695-7902

- Community Development Manager
  We Energies
  231 West Michigan Street
  Milwaukee, Wisconsin 53203
  Telephone: (414) 221-3018
  Facsimile: (414) 221-3853

- Southeastern Wisconsin
  Regional Planning Commission
  P.O. Box 1607
  Waukesha, Wisconsin 53187-1607
  Telephone: (262) 547-6721

This profile is one in a series of regional, county, and community profiles prepared by the Southeastern Wisconsin Regional Planning Commission in cooperation with the Regional Economic Partnership as a community service.

Revision date: December 2004

Figure 9

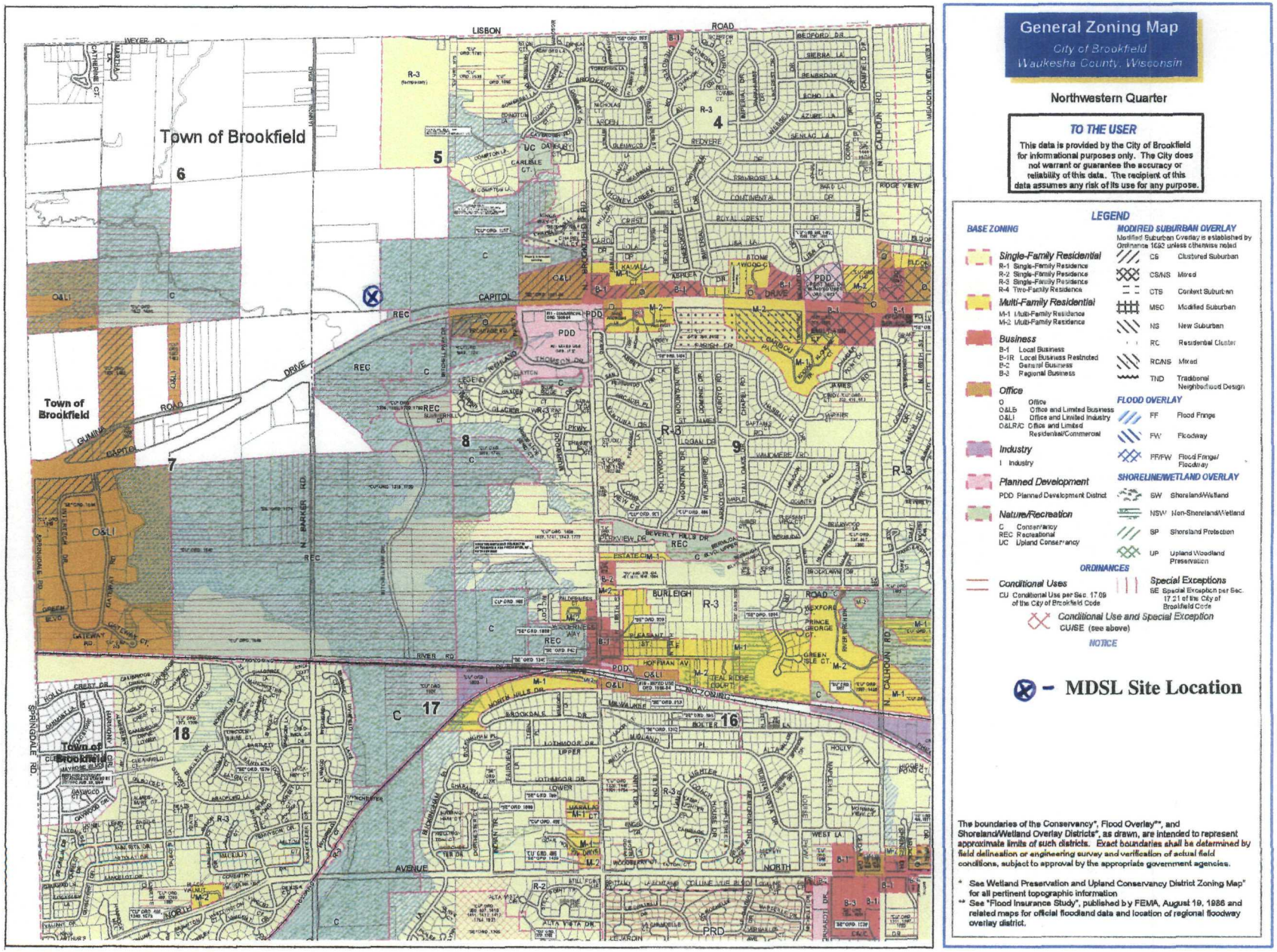
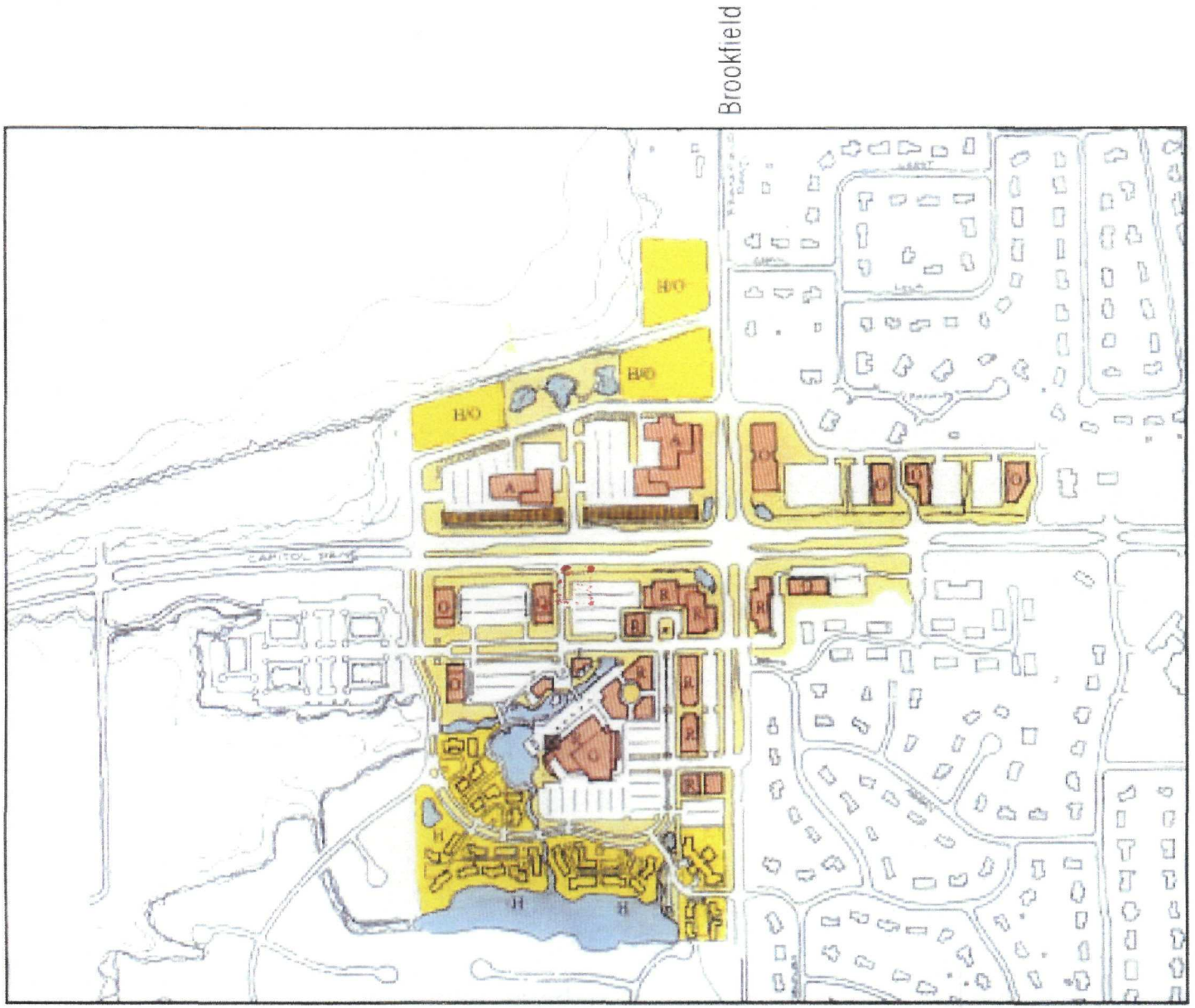

General Zoning Map
City of Brookfield
Waukesha County, Wisconsin
Northwestern Quarter
TO THE USER
This data is provided by the City of Brookfield for informational purposes only. The City does not warrant or guarantee the accuracy or reliability of this data. The recipient of this data assumes any risk of its use for any purpose.
LEGEND
BASE ZONING
Single-Family Residential
R-1 Single-Family Residence
R-2 Single-Family Residence
R-3 Single-Family Residence
R-4 Two-Family Residence
Multi-Family Residential
M-1 Multi-Family Residence
M-2 Multi-Family Residence
Business
B-1 Local Business
B-1R Local Business Restricted
B-2 General Business
B-3 Regional Business
Office
O Office
O&L5 Office and Limited Business
O&LI Office and Limited Industry
O&LR/C Office and Limited Residential/Commercial
Industry
I Industry
Planned Development
PDD Planned Development District
Nature/Recreation
C Conservancy
REC Recreational
UC Upland Conservancy
ORDINANCES
Conditional Uses
CU Conditional Use per Sec. 17.09 of the City of Brookfield Code
Special Exceptions
SE Special Exception per Sec. 17.21 of the City of Brookfield Code
Conditional Use and Special Exception
CU/SE (see above)
NOTICE
MODIFIED SUBURBAN OVERLAY
Modified Suburban Overlay is established by Ordinance 1682 unless otherwise noted
CS Clustered Suburban
CS/NS Mixed
CTS Context Suburban
MSC Modified Suburban
NS New Suburban
RC Residential Cluster
RC/NS Mixed
TND Traditional Neighborhood Design
FLOOD OVERLAY
FF Flood Fringe
FW Floodway
FF/FW Flood Fringe/ Floodway
SHORELINE/WETLAND OVERLAY
SW Shoreland/Wetland
NSW Non-Shoreland/Wetland
SP Shoreland Protection
UP Upland Woodland Preservation
MDSL Site Location
The boundaries of the Conservancy*, Flood Overlay**, and Shoreland/Wetland Overlay Districts*, as drawn, are intended to represent approximate limits of such districts. Exact boundaries shall be determined by field delineation or engineering survey and verification of actual field conditions, subject to approval by the appropriate government agencies.
* See Wetland Preservation and Upland Conservancy District Zoning Map" for all pertinent topographic information
** See "Flood Insurance Study", published by FEMA, August 19, 1986 and related maps for official floodland data and location of regional floodway overlay district.
Town of Brookfield
LISBON ROAD
CAPITOL DRIVE
RIVER RD
BROOKFIELD RD
N. CALHOUN RD
N. BARKER RD
SPRINGDALE RD
AVENUE

Figure 10

Recommended Development Option

Option D2

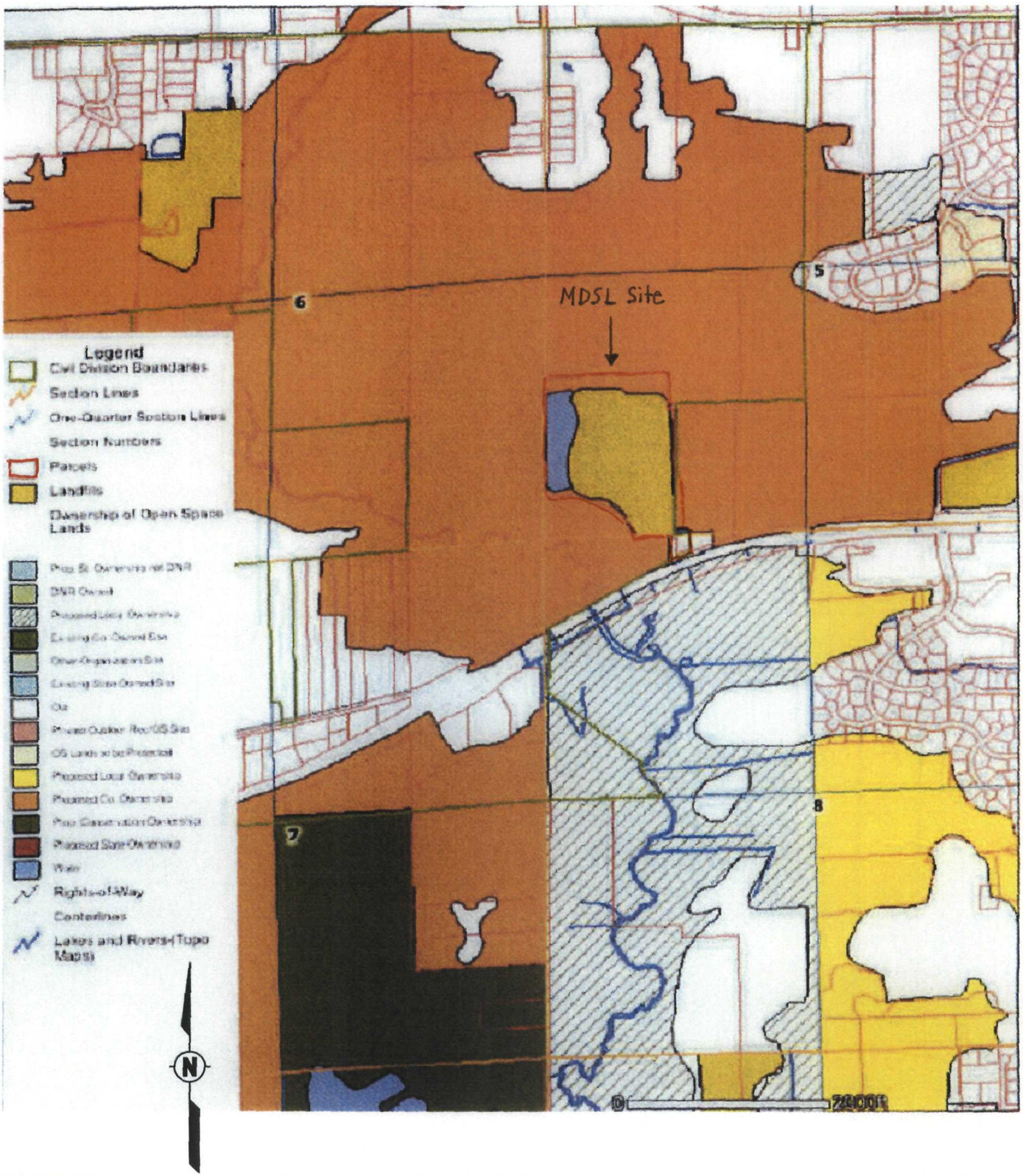
R – Retail
A – Auto service
O – Office
r – Restaurant
G – Grocery
H – Housing



Approximate Development Program

100,000sq.ft.	Retail
75,000 sq.ft.	Auto service
100,000 sq.ft.	Office
18,000 sq.ft	Restaurant
50,000 sq.ft.	Grocery
18 acres	Housing

Figure 11



STS CONSULTANTS
11425 W. Lake Park Drive
Milwaukee, WI 53224
414-359-3030
www.stsconsultants.com

PROPOSED PROPERTY USE MAP
MASTER DISPOSAL SERVICE LANDFILL SITE
BROOKFIELD, WISCONSIN

Figure 12

cap and close the landfill in 1982; however, the cover materials used at that time were derived from an onsite source with an inadequate clay content. Erosion of the initial cap and subsequent re-exposure of the waste materials consequently occurred. The only known wastes which were received after partial closure were wood wastes that were burned in the air curtain destructor; the ash from the burning was disposed of on site. MDSL ceased this activity and closed in 1985.

Basis for Taking Action

On September 8, 1983, EPA proposed the Site for listing on the National Priorities List (NPL). The Site listing was finalized on September 21, 1984. In June 1986, approximately 20 PRPs entered into an administrative order on consent (AOC) with U.S. EPA and WDNR for the purpose of performing a Remedial Investigation/ Feasibility Study (RI/FS). The goal of the RI/FS was to determine the effect of the MDSL Site on the surrounding environment and to present cleanup alternatives for reducing the risks to human health and the environment. The PRP contractor performing the RI was Rollins Environmental Services, Inc. EPA oversight during the RI/FS was performed by Camp Dresser & McKee Inc., Chicago, IL as the prime contractor under the REM II EPA Contract No. 68-01-6939.

During the RI, samples were taken from surface and subsurface soils, monitoring wells, residential/municipal wells, surface water, and sediment. Limited air and soil sampling were also performed. An assessment of wetlands surrounding the Site was not included in the RI. The largest class of wastes at the MDSL Site included foundry sands and slags, along with plastic wastes and certain solvents associated with their usage.

Based on the June 1990 Remedial Investigation (RI) report and the 1990 ROD, the primary contaminants or chemicals of concern (COCs) affecting the soil and groundwater were organic compounds, inorganics compounds, and metals. Specifically, the primary COCs, several of which are carcinogens, were identified as:

Inorganic	Organic
Arsenic	Methylene Chloride
Cadmium	1,1-Dichloroethylene (1,1-DCE)
Chromium	Trichloroethylene (TCE)
Copper	Benzene
Lead	Toluene
Iron*	Xylenes
Nickel*	
Zinc*	

(* Not identified in ROD but named as COCs in other Site documents)

Eighteen monitoring wells were installed at nine locations around the MDSL Site. Six wells were in each of the following depths: shallow (A1 wells), intermediate (A2 wells) and deep (A3 wells). The monitoring wells were positioned in six offsite and three onsite locations.

Groundwater samples were collected from the eighteen monitoring wells, five existing monitoring wells, seven residential wells and two municipal wells. The results of the groundwater monitoring sampling revealed elevated concentrations of both organic and inorganic compounds in both the sand and gravel and the dolomite aquifers. The RI described groundwater movement as being generally to the south-southwest toward the Fox River, and noted that there were residential well users located approximately 1 to 2 miles away downgradient of the Site, however no contamination attributable to the MDSL Site was found in the seven residential and two municipal wells sampled. Worst case modeling indicated that the contaminant plume could migrate a maximum of 1,500 feet south of the MDSL Site over a 70-year period ("Modeling Groundwater Contamination", Attachment E, Rollins Environmental Services FS Endangerment Assessment of MDSL, December 1988).

During the RI, the Fox River, dredge pond and drainage channels surrounding the landfill were sampled to determine whether contamination had occurred as a result of site activities. Two rounds of surface water samples were collected. A comparison of upstream river and drainage channel results to downstream locations showed that the Site has had a detrimental effect on surface water quality. For example, upstream Fox River iron levels ranged between 624 to 597 micrograms per liter (ug/L) or parts-per-billion (ppb) for the first and second rounds of sampling. At a downstream station, located just after the confluence with the main drainage channel, the iron level range had increased (842 to 971 ppb). East, or upgradient of the Site, the main drainage channel showed iron concentration range of 633 to 700 ppb. At a point in the main drainage channel just prior to entry into the Fox River, iron levels had increased to 1,900 and 3,090 ppb, respectively, though no cause for this increase has been identified. Additionally, at this same point, a cadmium level of 44 ppb was detected. Cadmium was not detected at any upstream point. The detected levels of cadmium exceeded federal and state ambient water quality criteria.

The risk assessment concluded that the Site posed a risk to human health through ingestion of contaminated groundwater and, if untreated, this groundwater would continue to present risks. The risk assessment considered both soil ingestion and dermal contact pathways for the adult populations, but did not take into account the use of the Site by children, as the Site was partially fenced. However, dirt bike tracks were found at the Site during subsequent site visits, indicating that children may have access to the Site. The reasonable worst case hazard index was calculated to be 1.2 for adults, based primarily on the contributions from lead, toluene and 1,1-dichloroethene. A hazard index of greater than one indicates an unacceptable systemic or noncarcinogenic risk. The worst case hazard index calculated for children at the MDSL Site was 4.0. The cumulative carcinogenic risks for adults and children from the contaminant levels found at the Site were calculated to be $4x10^{-4}$ (four in ten-thousand) for adults and $1x10^{-3}$ (one in ten-thousand) for children. This means that if an adult were to be exposed daily to the contaminant levels at the Site under the exposure assumptions used, then an estimated four in ten-thousand adults could develop cancer above and beyond the usual prevalence (background level) of the disease. The NCP established acceptable levels of carcinogenic risk for Superfund sites at between one in ten-thousand and one in one-million excess lifetime cancer cases. This translates

to a risk range of $1x10^{-4}$ to $1x10^{-6}$.

Since the chief exposure pathways at MDSL were contact with the waste mass and ingestion of groundwater, the selected remedy addressed these threats by containing the plume of contaminated groundwater, and by halting deterioration of existing cover[1] materials which could result in subsequent exposure of the waste mass. Waste materials in contact with the groundwater would continue to impact the groundwater; thus, groundwater containment was a necessary component of the overall waste mass containment alternative.

The RI/FS Report and the Proposed Plan for the MDSL Site were released to the public for comment on July 9, 1990. On July 16, 1990, EPA conducted a public meeting at the Brookfield City Hall concerning the Proposed Plan. Written and oral comments were accepted and representatives from EPA and WDNR answered questions concerning problems at the Site and the remedial alternatives under consideration. The ROD was signed by EPA with concurrence from the State of Wisconsin on September 26, 1990.

IV. Remedial Actions

Remedy Selection

The fact that the MDSL Site is located within a wetland near the Fox River contributed to the complexity of environmental problems encountered there. As a result, EPA organized the work into two operable units (OUs). The first operable unit (OU1), was a Source Control Operable Unit prescribing containment of the waste mass with construction of a cap on the Site to prevent infiltration of water through the landfill. This OU was designed to utilize construction measures and effluent limitations to attain location-specific ARARs.

A second operable unit was deemed necessary since groundwater was believed to be in direct contact with the waste materials. The second operable unit (OU2) prescribed controlling the migration of the contaminant plume via a groundwater containment system. Because this was an interim groundwater remedy, attainment of federal/state groundwater quality criteria throughout the aquifer was not a goal of this operable unit. The September 1990 ROD addressed the first of the two planned operable units for the Site.

1) Source Control Operable Unit

On September 26, 1990, the EPA signed the first operable unit "Source Control Remediation" ROD for the Site. The goal of the operable unit ROD was containment rather than to attain groundwater restoration quality standards. The major components of the selected remedy consisted of the following:

- Placement of a clay/soil cap and an active venting system over the fill material to

reduce infiltration into the waste mass (constructed in accordance with NR 504.07 and NR 506.08 Wisconsin Administrative Code)[1] ;

- Installation of a groundwater extraction and treatment system to remove both organic and inorganic contamination from a portion of the contaminated alluvium aquifer groundwater beneath the Site:

- Conduct groundwater, surface water, water budget/ hydrology and wetland monitoring to assess the quality and quantity of area groundwater, surface water and wetlands, and to determine if further mitigating action needed to be taken;

- Impose access and use restrictions.

2) Second (Final) Operable Unit (OU2)

It was anticipated that the second of two planned operable units would focus on the restoration of the groundwater (both upper alluvium aquifer as well as the dolomite aquifer beneath the alluvium) to comply with State and Federal ARARs, and on impacts to the wetlands, Fox River, and the environment. The remedy for the second operable unit was anticipated to define the remediation standards and the restoration time frame of the contaminated aquifer. The goals of the OU2 were the following:

- consider aquifer response and wetlands effects;

- seek to optimize both groundwater restoration and wetlands vegetation preservation.

---

[1]The MDSL Site received primarily industrial wastes of a non-hazardous nature. While such wastes contain hazardous substances, they are not RCRA hazardous wastes, and waste mass contamination is at relatively low levels. Therefore, the selected remedy for the MDSL Site includes a clay/soil cap of the waste mass with an active gas venting system and a groundwater pump and treat system to contain and treat groundwater as well as prevent contaminants from leaving the Site in the shallow alluvium aquifer. A RCRA Subtitle C cap is not technically appropriate because of contact between the waste mass and groundwater. More vigorous means of reducing infiltration is not justified because such a cap would not preclude waste mass contact with groundwater. In accordance with NR 504.07 and NR 506.08 Wisconsin Administrative Code, the cap/cover system will be composed of a minimum 2-foot thick clay cap that will minimize water from infiltrating through the landfill; covered by a 1-1/2 to 2-1/2-foot thick soil frost-protection layer; covered by a layer of top soil at least 6 inches thick to promote vegetation growth. The cap will be slightly sloped to promote precipitation runoff. In addition, an active venting system, in accordance with Wisconsin NR 504.05, will be installed to reduce gas buildup from decomposition within the landfill, and to monitor or control emissions from the vents.

The final remedy for the second Operable Unit (OU2) has not been determined, however this issue will be addressed in the Recommendation Section.

Remedial Action Goals

The primary goals of the remedial actions at the Master Disposal Service Landfill Site as described in the ROD were: 1) to reduce infiltration into the landfill which is a source of groundwater contaminations, and to reduce the risks associated with the exposure to contaminated materials; 2) to contain known contaminated groundwater in the surficial aquifer. More specifically, the goals were as follows:

Reduce infiltration into waste mass by:

- capping the landfill with clay/soil cap;
- installing a passive landfill gas venting system; and
- controlling landfill gas as necessary to meet air regulations

Contain contaminated groundwater in the upper aquifer and minimize groundwater extraction impacts on the wetlands by:

- controlling contaminated groundwater in the sand and gravel aquifer unit (A1 and A2 zones);
- treating the groundwater to meet the effluent limitations before it is discharged from the treatment pond;
- discharging the treated water to onsite surface water; and,
- delineating wetlands/vegetation surrounding the Site and undertaking further monitoring to determine if mitigating action needs to be taken regarding extraction; and, if any adverse impacts to the wetlands

Monitor the extent of contamination and the effectiveness of the remedy by:

- conducting long-term surface water and groundwater monitoring in the A1, A2, and A3 zones; and
- monitoring wetlands;

Limit access to the Site by:

- implementing institutional controls including deed, land use, and groundwater use restrictions, and
- implementing site access restrictions such as fencing.

Remedy Implementation

During the period after the completion of the RI/FS and the start of the RA (1990 - 1996), no sampling was conducted at the Site. The consent decree– the legal instrument by which the potentially responsible parties (PRPs) agree to perform the Remedial Design and Remedial Action (RD/RA), was entered on January 30, 1992 between 33 companies comprising the Master Disposal PRP Trust III group, EPA, and the WDNR. On April 14, 1992, EPA, in consultation with WDNR, approved the RD/RA scope of work (SOW). The final RD package was approved by EPA on March 29, 1994. The major remedy components requiring construction at the Site were soil/clay cover, landfill gas venting system, and a groundwater extraction and treatment system. The PRP Trust III group contracted the construction work to Terra Engineering & Construction, Madison, WI and utilized CH2M Hill as the project coordinator and environmental consultant during the RD/RA phase of the project. EPA oversight was conducted by Weston, Inc via the regional ARCS contract. Both operable units were constructed between 1994 and 1997. Design and construction work at the Site were phased due to space constraints, with the cap design proceeding on a faster track than the groundwater design. The cap design was approved in March 1994. Cap construction began in April 1994 and was completed by the end of that year. The pre-final inspection occurred on September 20, 1994; a follow-up inspection was conducted on October 25, 1994.

The Construction Completion Report for OU1 verified that the construction was accomplished using sound engineering practice and following the guidelines of the WDNR requirements in NR 500 and NR 600 and Wisconsin Administrative Code (WAC). Quality assurance tests consistently met or exceeded the criteria established by the WDNR. Also, based on observations, surveys, photographs, and soils analysis, the construction activities for the Site remediation were performed in substantial compliance with the "Final Design Submittal, Remedial Design/ Remedial Action, for the Source Control Operable Unit of the Master Disposal Landfill Site," and applicable construction design modification approvals. The cap consists of the following layers from the bottom up:

- Grading layer (of variable depths)
- 6-inch working surface layer
- 2-foot clay barrier
- 2-foot cover soil
- 6-inch top soil
- Vegetative cover

Due to the steep slope on the eastern side of the Site, a 60-mm thick HDPE geomembrane overlain with concrete mat was used to maintain the slope and reduce disturbance to the adjacent wetlands.

The design plans for the groundwater system were approved in July 1996. The majority of the groundwater extraction construction was completed in the fall of 1996 and substantially

finished by the end of 1977. The groundwater extraction system consists of 11 extraction wells from which contaminated groundwater is discharged to the large pond on the western side of the Site (see figure 13). The extraction well network has been designed to extract approximately 85 gallons per minute (gpm) of contaminated groundwater for treatment. The pumping rate was estimated based on a well performance test conducted in July of 1994. The rate of pumping for each well can be varied during operation. Treatment in the pond consists of aeration and settling during which contaminants are biodegraded, which was demonstrated to meet WDNR standards for discharge to the Fox River. Treated waters are allowed to seep through wetlands adjacent to the Site to the Fox River. Had the discharge been routed directly into the Fox River, the wetlands would have suffered a net loss of water. As specified in Agency-approved design reports, the extraction system is shutdown usually from November through March, when pond water temperatures are too low for natural biodegradation to occur. The groundwater moves at such a slow rate that contaminants remain under the system's influence even when the system is shutdown for this time period.

The groundwater monitoring program for the Site was initiated in October 1996. Operation of the groundwater extraction and treatment system began in April 1997. A final inspection of the groundwater pump and treat system was conducted on May 16, 1997. At that point, long-term groundwater remediation began. On June 19, 1997, a site-wide Preliminary Closeout Report (PCOR) was issued by EPA. The consent decree Scope of Work included requirements for monitoring the Site in accordance with an approved monitoring plan as part of the RA. The monitoring plan was finalized in July 1996. The data was to be collected in order to serve the following purposes:

- Provide data to confirm the operation of the groundwater extraction system and collection of contaminated groundwater within the lower and intermediate aquifer zones (A1 and A2 zones);
- Monitoring water levels in the wetlands adjacent to the extraction system;
- Collect data to monitor the extraction system's potential effects on wetland vegetation;
- Provide data on the treated discharge;
- Provide additional data on the possible contamination of the deep aquifer zone (A3 zone); and,
- Collect landfill gases to determine off-gas flow rates, concentrations, and compliance with the air regulations.

The sampling and surveys were divided into the following three modules:

Module 1: Groundwater and Wetlands Monitoring Program consisting of three components: 1) quarterly containment monitoring of six piezometers and eleven extraction wells is used to monitor groundwater elevations between the landfill and the pond. These groundwater elevation and hydraulic gradients are used to determine the effectiveness of the groundwater extraction and hydraulic gradient control systems in preventing further migration of groundwater contaminants in the A1 and A2 zones; and, 2) Quarterly groundwater samples are collected from the A3 zone

to characterize potential contamination. Annual groundwater samples are collected from the A1 and A2 zones to characterize the nature and extent of groundwater contamination over time. Since groundwater movement at this location is very slow, annual sampling will adequately address the issue of groundwater quality over time; and, 3) annual vegetation surveys are conducted to detect potential hydrologic changes, vegetation stress, and species changes in the wetlands surrounding the Site. The wetlands response to dewatering caused by the extraction of groundwater is assessed. Annual vegetation surveys are performed along six transects in either July, August, or September of each year. Each 300-foot transect begins in the uplands near the base of the landfill and enables the collection of data from a variety of vegetative zones occurring along the gradient extending from the landfill. The zones transition from the uplands of the landfill, to the wetland/upland boundary, to herbaceous wetlands, and wooded wetlands. After two years, the frequency of the survey will be re-evaluated.

Module 2: Extracted Groundwater and Surface Water Monitoring Program evaluates the water quality of discharges from the groundwater extraction system and the acute toxicity and water quality of pond discharges to the wetlands. The monitoring program consists of pond water level measurements; monthly and quarterly sampling of water samples from extraction wells (process influent sampling) and discharge pipe (surface water sampling).

Module 3: Landfill Gas Monitoring Program identifies and quantifies primary constituents present in the landfill offgas and the volume of the offgas generated.

Among other requirements, the consent decree required monthly reporting by the PRPs, and submission of a technical memo after the collection of data for two years after extraction system startup. At that point, or when a subsequent ROD for groundwater remediation specifies otherwise, the PRPs were allowed to petition for reduction in sample collection frequency.

In order to ensure that Remedial Action Objectives (RAOs) are being met, sample analytical results for the involved media at the Site were compared to the ARARs determined for the Site. Although the ROD specifically states that extracted groundwater must be treated to meet state water quality-based effluent discharge limitations and antidegradation provisions, the groundwater from the shallow, intermediate, and deep aquifer zones has historically been compared to the Wisconsin Administrative Code Chapter NR 140 Enforcement Standard (ES) and the Preventative Action Limit (PAL) for each constituent. The ESs and PALs are the state regulatory criteria to assess the potable water quality. As such, ESs and PALs are at least as stringent as the Federal drinking water standards know as the Maximum Contaminant Levels (MCLs).

Sample analytical results from extracted groundwater and surface water monitoring program are also used to demonstrate compliance with the substantive requirements of the Wisconsin Pollutant Discharge Elimination System (WPDES). During the extraction system operation, monthly monitoring for water quality parameters and select organic and metal compounds have been conducted at three locations: 1) the extraction well manifold discharge

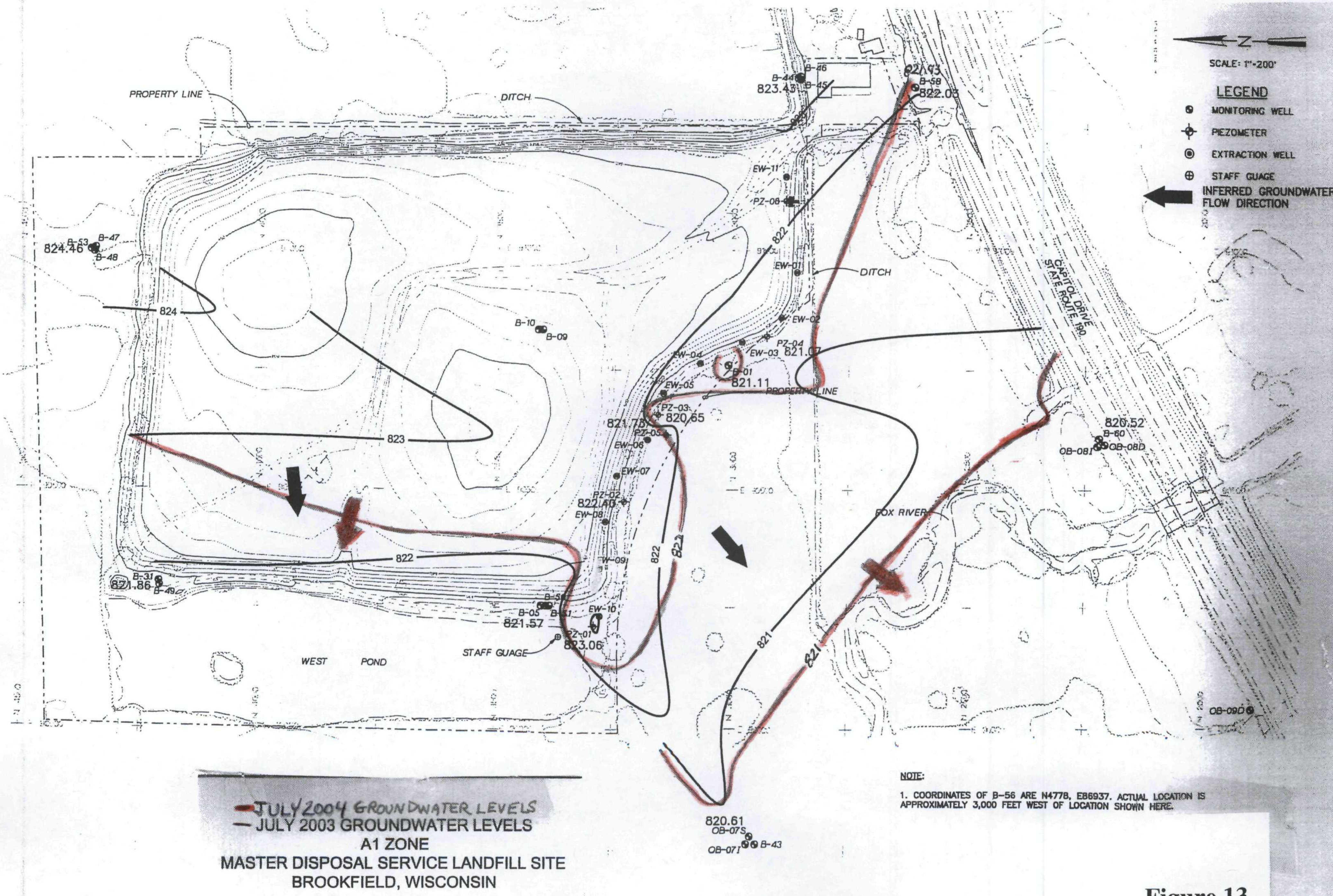
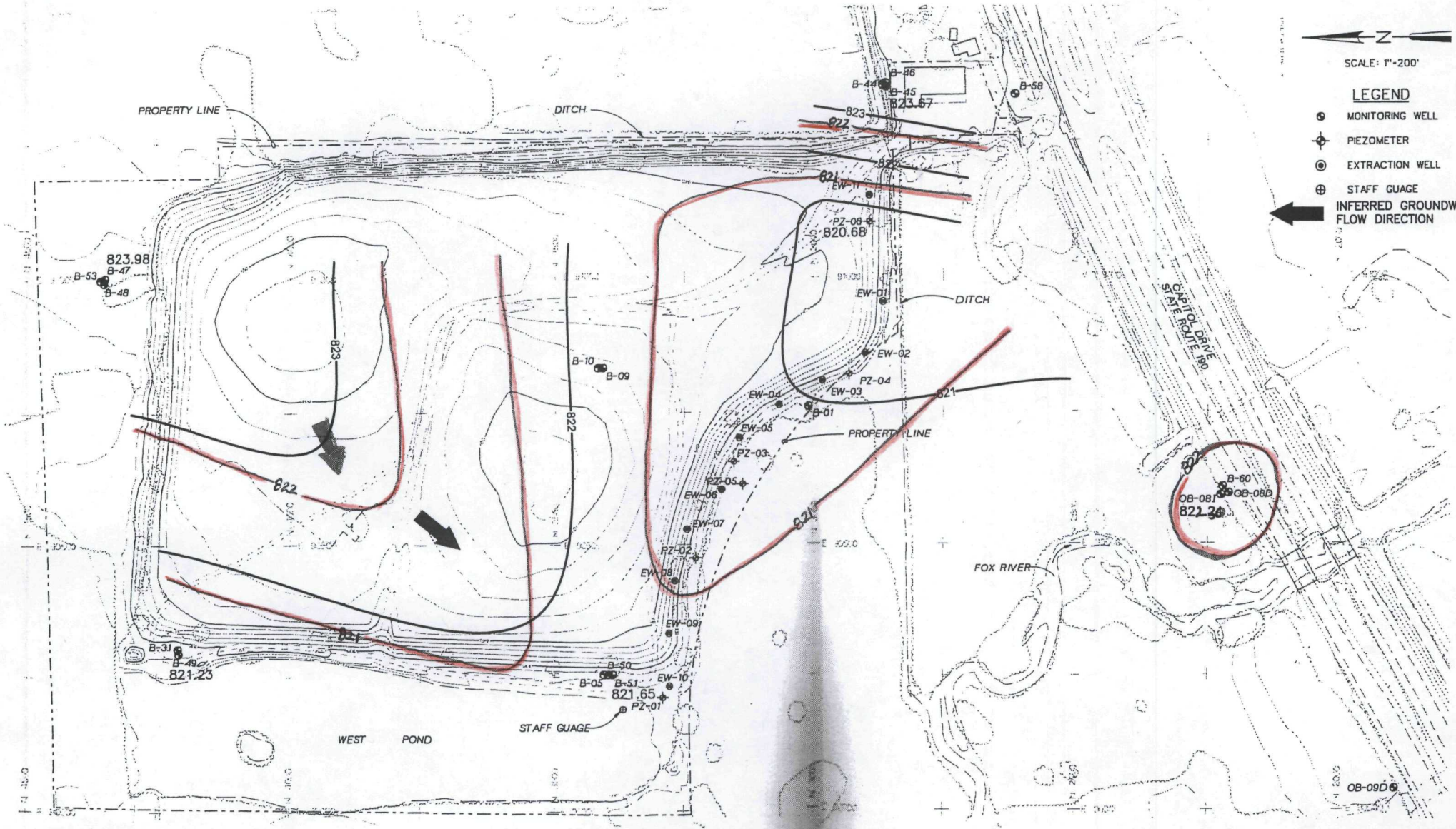

SCALE: 1"=200'
LEGEND
MONITORING WELL
PIEZOMETER
EXTRACTION WELL
STAFF GUAGE
INFERRED GROUNDWATER FLOW DIRECTION
PROPERTY LINE
DITCH
CAPITOL DRIVE STATE ROUTE 190
FOX RIVER
WEST POND
STAFF GUAGE
824
823
822
821
824.46
823.43
821.93
822.03
821.07
821.11
821.73
820.65
822.40
821.86
821.57
823.06
820.52
820.61
B-53
B-47
B-48
B-10
B-09
B-44
B-46
B-45
B-58
B-01
B-31
B-49
B-56
B-05
B-60
B-43
EW-01
EW-02
EW-03
EW-04
EW-05
EW-06
EW-07
EW-08
EW-09
EW-10
EW-11
PZ-01
PZ-02
PZ-03
PZ-04
PZ-05
PZ-06
OB-07S
OB-07I
OB-08I
OB-08D
OB-09D
NOTE:
1. COORDINATES OF B-56 ARE N4778, E86937. ACTUAL LOCATION IS APPROXIMATELY 3,000 FEET WEST OF LOCATION SHOWN HERE.
JULY 2004 GROUNDWATER LEVELS
JULY 2003 GROUNDWATER LEVELS
A1 ZONE
MASTER DISPOSAL SERVICE LANDFILL SITE
BROOKFIELD, WISCONSIN

Figure 13



JULY 2004 GROUNDWATER LEVELS
— JULY 2003 GROUNDWATER LEVELS
A2 ZONE
MASTER DISPOSAL SERVICE LANDFILL SITE
BROOKFIELD, WISCONSIN

NOTE:

1. COORDINATES OF B-56 ARE N4778, E86937. ACTUAL LOCATION IS APPROXIMATELY 3,000 FEET WEST OF LOCATION SHOWN HERE.

Figure 14

point (GW-EXT-01); 2) the furthest extraction well from the discharge point (EW-11); and, 3) from the pond. In addition, monthly pond surface water and quarterly bioassays of the pond were conducted. Effluent discharge limitations for treated groundwater are calculated from State discharge statutes, and specified weekly averages for metal contaminants and monthly averages for VOCs, as well as maximum concentration levels. Chemical-specific goals include the monthly average of benzene--8.5 lbs/day, TCE--22 lbs/day, 1,1-DCE--2.9 lbs/day, and daily maximum concentration levels of toluene--17 milligrams per liter (mg/L), arsenic--0.73 mg/L, chromium (total)--9.7 mg/L, and lead--1.5 mg/L.

The landfill gas from the passive venting system was sampled to determine if the mass emission rates of several constituents in the landfill gases exceeded the regulatory levels found in the applicable provisions of the National Emission Standards for Hazardous Air Pollutants (NESHAP) and WAC Chapter NR 445, which are more stringent. Two indicator compounds benzene and vinyl chloride from NR 445 Table 3 Group A (nonpharmaceutical compounds) were selected for each quarterly sampling. Methane and non-methane organic carbon (NMOCs) were analyzed as general indicator parameters.

The following is Table shows the long-term monitoring program for the Site as required by the RA plan outlined in the Consent decree. All analyses are performed by Columbia Analytical Services, Inc. of Redding, CA. The shaded areas of the table indicate those areas where the monitoring requirements have been reduced since the remedial action began. The monitoring changes for those areas are indicated in the Table 2 footnotes.

TABLE 2 - LONG-TERM MONITORING PLAN FOR THE MDSL SITE

Module 1: Groundwater Sampling and Wetland Survey Schedule			
Sample Location	**Analyses**	**Frequency**	**Purpose**
Quarterly Water Level Monitoring			
A1, A2 aquifers: PZ-01 to PZ-06; E1 to E11; B31, B-49, B-5, B-50, OB-07S, OB-07I, OB-08I, **A3 aquifer:** B-46, B-48, B56, B51, OB-08D, OB-09D	Water Levels	Quarterly: April, July, October, January	Monitor fluctuations in groundwater elevations; capture of contaminated groundwater; water levels in wetlands; hydraulic gradient control provided by pond
Quarterly Groundwater Sampling †			

A1, A2 aquifers: OB-07S, OB-07I, OB-08I **A3 aquifer:** B-46, B-48, B-51, OB-08D, OB-09D, B-56	Field analyses; Target Compound and Target Analyte Lists from SOW Table 1; COCs (wells OB-07S, OB-07I, OB-08I); conventional analyses (OB wells)	Quarterly: April, July, October, January	Determine whether contamination present; establish baseline groundwater quality for new wells.
Annual Groundwater Sampling			
A1 aquifer: B-53, B-31, B-5, B-44, B-10, B-1, B-60, B-58, OB-07S **A2 aquifer:** B-47, B-49, B-50, B-45, B-9, B-43, OB-OB-7I, OB-08I	Field Analyses, COCs, and conventional analyses	Annually	Monitor fluctuations in the groundwater elevations and changes in groundwater quality
Annual Wetland Survey			
T-2, T-3, T-4, T-6, T-8, T-10	Monitor stress and changes in wetland vegetation	Annually: Late summer or early fall	Evaluate impact of potential groundwater drawdown on wetlands vegetation
Module 2: Process and Surface Water Sampling Schedule			
Monthly Pond Discharge and Extracted Groundwater Sampling			
Pond Staff Gauge	Water level, field analyses, COCs, conventional analyses, discharge parameters	One grab sample per month	Assess process/pond water quality
Extracted Groundwater Manifold Pipe and EW-11*	Field analyses, conventional parameters, COCs	Quarterly: April, July, October, January	Assess process influent water quality and process performance
Quarterly Pond Sampling			
Pond	Acute toxicity bioassay	Immediately following treatment system startup. One battery of tests per quarter for the first 3 years, afterward reduced to once/year.	Assess pond effluent water quality
Module 3: Landfill Gas Sampling Schedule			

Landfill Offgas Vents	NR 445 Table 3, Group A, non-pharmaceutical compounds, methane, and NMOCs	First quarter of one year (March)	Demonstrate landfill gas emissions of primary constituents do not exceed allowable regulatory levels
Landfill Offgas Vents	Benzene, vinyl chloride, methane, non-methane organic compounds (NMOCs)	Second, third, and fourth quarter of one year: June, September, December	Demonstrate landfill gas emissions of primary constituents do not exceed allowable regulatory levels

Note: Shaded areas indicate where the monitoring plan has been reduced from the original requirements as listed. These current reduced schedules are indicated by the notes below:

† This quarterly groundwater sampling has been reduced to one well (PZ-02) and one analyte (benzene)

* This analyses is currently suspended during the probationary shutdown of the groundwater extraction system.

PZ = Piezometers; E = Extraction wells; B, OB = Monitoring wells; T = Transect lines

Table 3 (see Attachment 1) shows the monitoring events that occurred at the Site between October 1996 and October 1999.

On May 6, 1999, the PRPs submitted a two-year evaluation technical memorandum which summarized results from the monitoring and recommended the following revisions to the monitoring regime:

1. Intensive piezometer water level monitoring should be performed in Spring during extraction system startup in order to distinguish the effects of the extraction system from natural shallow groundwater level fluctuations;

2. Monitor groundwater elevations at all onsite monitoring wells quarterly;

3. Groundwater quality monitoring of the shallow aquifer system should be continued but reduce the A3 monitoring frequence from quarterly to annually;

4. Continued monitoring of pond surface water elevation and extracted groundwater and pond surface water quality is recommended. If acute toxicity bioassay results continue to be negative, the testing should be changes from quarterly to annually as of April 2000 (36 months after extraction system startup), however, the testing should occur in July after the system has been started up annually.

5. The landfill gas monitoring be discontinued after a year of quarterly sampling events showed no exceedances;

6. The annual vegetation survey be discontinued as the extraction system shows a negligible impact on groundwater levels in the surrounding wetlands and vegetation data do not argue for a change in remedial activities.

EPA in consultation with WDNR determined that reduced monitoring was appropriate for this Site at the time. Approval was granted on January 18, 2000. Under that scenario, the landfill gas monitoring was eliminated. Thirty monitoring wells (and piezometers) and 11 extraction wells are monitored quarterly for water levels. Twenty-three wells are sampled annually for the contaminants of concern

In a September 12, 2000 letter to CH2M Hill, EPA RPM Lolita Hill approved a request to eliminate the annual vegetation survey from the annual monitoring program. The monitoring performed from the start of the remedy implementation through June 2000 followed the 1996 monitoring plan described in Table 2. The monitoring performed from July through October 2000 followed the changes to the monitoring program as approved by EPA in 2000 as per the Two Year Evaluation. These changes included:

- Adding EW-1 to EW-10, PZ-01 to PZ-06 and B-01 from quarterly to monthly water level measurements;
- Adding a pond quarterly sampling for water level, and acute toxicity bioassay through April 2000 beginning July 2000;
- Dropping quarterly analyses for field parameters, COCs, TCL/TAL and conventional analyses in certain wells within all three aquifer zones to annual, however quarterly elevations are still performed;
- Performing COC analyses instead of TCL/TAL analyses for certain wells in the A1 and A2 zones;
- Dropping conventional analyses from all quarterly and annual analyses;
- Performing annual TCL/TAL analyses in A3 wells instead of COC analyses.

Table 4 (see Attachment 2) shows the monitoring events that occurred between January 2000 and July 2005.

For the first time in January 2000, the pond water sample failed the quarterly acute toxicity bioassay test due to the elevated ammonia levels in the ice-covered pond. Two retests of the bioassays were conducted February 10-14, 2000, which passed. No water had been discharged into the pond for the two months prior to the bioassay test because the extraction system had been shutdown for the winter season. Natural biological processes reduce the ammonia level once the pond water warms in the spring and before the extraction system is started up again.

System Operations/O&M

The major components of the selected remedy consisted of: 1) Placement of a clay/soil cap and an active venting system over the fill material to reduce infiltration into the waste mass

(in accordance with NR 504.07 and NR 506.08 WAC); 2) Installation of a groundwater extraction and treatment system to remove both organic and inorganic contamination from a portion of the contaminated alluvial groundwater beneath the Site; 3) Conduct groundwater, surface water, water budget/hydrology and wetland monitoring to assess the quality and quantity of area groundwater, surface water, and wetlands, and to determine if further mitigating action needed to be taken; and 4) Impose access and use restrictions.

The O&M activities, performed by Terra Engineering and Construction Co., Madison, WI consist of the following aspects per the July 1996 O&M Plan:

Groundwater Extraction and Treatment System

The groundwater extraction and treatment system consists of 11 extraction wells located along the southern slope of the landfill. The wells pull from the A1 and A2 zones to a common header that discharges to the pond west of the landfill. The point of discharge is submerged. Each extraction well contains a pitless adapter to facilitate the removal of the pump, a pressure gauge (on the well head), and a water level sensor (in the well) to turn off the pump in the event that water level in the well falls below a preset minimum level. The extraction well pumps are controlled by three control panels, also located along the south slope of the landfill. A pump was not installed in extraction well EW-07 because this well does not produce sufficient quantities of water.

The extraction well network was designed to pull approximately 85 gallons per minute (gpm) of contaminated groundwater. The pumping rate was estimated based on a well performance testing conducted in July 1994. The pumping rate for each well can be varied during operation. Individual extraction well pumping rates have ranged from 2 to 40 gpm. The existing groundwater extraction system was designed to provide hydraulic control in the shallow aquifers at the downgradient boundary of the landfill, as opposed to removal of contaminant mass from the saturated zone beneath the landfill. Based upon groundwater elevation information in the September 2000 Five-Year Review Report, the extraction system produces a cone of depression within a very narrow area along the southern edge of the landfill. The Two-Year Evaluation Report calculated horizontal hydraulic gradients across the Site for both the A1 and A2 zones. The results showed very low horizontal hydraulic gradients (approximately 0.0001 ft/ft) for both the January and July 1998 monitoring events– similar to the hydraulic gradients determined during preliminary design of the system. Moreover, Site groundwater flow velocities estimated as part of the RI are as follows:

Zone A1 = 9 to 30 feet/year
Zone A2 = 1 to 2 feet /year
Zone A3 = less than 1 foot/year

The system pumps extracted groundwater on a continuous basis to the pond. The water quality of the pond is tested regularly in accordance with the limits established by the WDNR. In the event that water quality limits are exceeded, the extraction system is shut down until water

quality is within the prescribed limits.

Of indirect concern is the maintenance of the groundwater levels for groundwater containment. Thus, groundwater levels are monitored quarterly to assure that the pumps are operating properly. If the groundwater rises to a level where containment is not assured, the pumps and well casings are inspected. Typical maintenance for the extraction wells are shock chlorination treatments.

The pumping system is activated by turning pump switches to AUTO. Pump will activate when the high level is sensed by the level sensor. Pumps will continue to operate until a low level is sensed and will turn off automatically. In the event of a failure, the pump must be reset manually. The other pumps will not shut down if one pump shuts down. Flow from each well can be controlled via the buried gate valves located adjacent to each well.

Inspection includes recording pressure gauge readings on a minimum monthly basis and for the first two months, every two weeks. Pressure readings are compared against previous readings to determine if pump performance has changed significantly or if obstructions are present in well screen or piping. Flow rate is determined using the pressure reading, water level, and the pumping curve. The point of discharge is visually inspected to determine a change of conditions. Every two years, pumps are pulled and inspected for deterioration of impellers. Pumps are also pulled and inspected if performance data suggests that well capacity has decreased to unacceptable levels. A decline in system capacity may occur from chemical encrustation or biofouling of the well screen or pump.

Treatment in the pond consists of aeration and settling, during which contaminants are biodegraded to meet WDNR standards for discharge to the Fox River. Treated waters are allowed to seep through wetlands adjacent to the Site into the Fox River. Had the discharge been routed directly into the Fox River, the wetlands would have suffered a net water loss. As specified in EPA-approved design reports, the extraction system is turned off annually from November through March, when pond water temperatures are too low for natural biodegradation to occur. The groundwater moves at such a slow rate that contaminants remain under the system's influence even when the system is shut down for this time period.

Landfill Cap and Vegetation

The landfill cap constructed under the current remedy is underlain by the old landfill cap and waste. Breaches, subsidence, or erosion of the cap increases the potential for exposure to the contaminants beneath the cap, as well as the amount of precipitation that can leach through the landfill waste. The cap is inspected by traversing the entire Site and observing the cap surface. At least four general site photos are taken during each inspection and the following conditions and maintenance remedies are employed:

- Depressions, general or localized subsidence, and evidence of ponded water

- Holes, burrows, or other disturbances of the cap by animals or trespassers. Breaches such as animal holes or manmade disturbances less than 2.5 feet deep (i.e., do not extend beyond the cover soil layer) must be filled with cover soil, topped with 6 inches of topsoil, and seeded. Breaches greater than 2.5 feet deep are significant and must be documented and corrected. Breaching may be controlled by increasing site security and making the area less attractive to people or animals.
- Mowing is performed during the growing season to maintain a healthy stand of grass and prevent brush or woody vegetation from growing on the landfill cap. The mowing frequency is approximately once a month, but is increased during wet and warm months and decreased during dry and hot months.
- Lack of vegetation causes erosion of landfill cap soil into depressions on or off the Site. Erosion gullies are repaired by filling with cover soil, topsoil, and grass, or by installation of temporary or permanent erosion control measures, or both.

The concrete mat on the eastern slope of the landfill and the surface water diversion berm along the western slope of the landfill are inspected and documented concurrently with the landfill cap and vegetation. The concrete mat is underlain by a 60-mil high density polyethylene (HDPE) geomembrane, which is underlain by the old landfill cap. Items that are documented include:

- Condition of the concrete mat. If a crack or settlement is evident, that section of the mat should be evaluated by engineering professionals.
- Growth of weeds or other obstructions within the concrete mat
- Depressions or other signs of material eroding out from under the concrete mat
- Siltation in the ditch at the toe of the mat or other signs of material eroding out from under the edge of the concrete mat

Landfill Gas Venting System

The landfill gas venting system is inspected when the landfill cap and vegetation are inspected, and the observations are included in the quarterly inspection report. The landfill gas venting system consists of a series of shallow gas collector trenches (about five feet deep) within the middle portion of the landfill. The collector trenches contain 6-inch-diameter corrugated and perforated horizontal HDPE gas collection pipes that have been backfilled with coarse aggregate. The 6-inch-diameter HDPE gas collection pipes are connected to 6-inch-diameter vertical polyvinyl chloride (PVC) gas vents that extend about seven feet above the final landfill grade.

Inspection of the system includes walking the length of the collector and interceptor trenches and observing the PVC gas vents. Items noted are: condition of the PVC gas vents; obstructions around the vent caps; and, depressions or other signs of surface material eroding into the collector trenches. Broken or damaged PVC gas vents are replaced or repaired per the construction details. Subsidence along the collector or interceptor trenches is documented in the quarterly inspection report for further evaluation.

Site Security

The perimeter of the landfill is fenced for security purposes. The fence and each of the three gates (southeast landfill corner main gate, southwest corner, and the northeast corner) are inspected for inclusion in the quarterly inspection report. Items noted are: condition of the fence, gates, and locks, and evidence of vandalism or access. If portions of the fence are broken or damaged, they are replaced or repaired per the original construction details. Locks are oiled regularly and replaced when they become difficult to open.

Culvert

The culvert under the access road at the southeast corner of the landfill is also inspected for inclusion in the quarterly inspection report. Items noted are: collection of debris or silt at the ends of the culvert; evidence that water is flowing through the culvert; condition of the culvert pipe; and, evidence of scour around or under the riprap protection. All debris/silt that collects at the entrance to the culvert is removed. Scour is documented in the quarterly inspection report for further evaluation.

Fox River Flow Determination

Flow of the Fox River at the Site is determined using flow from the U.S. Geological Survey (USGS) gauge in the Fox River in Waukesha. Flow at the Site is calculated using pro-rated flows at the USGS gauge based on tributary area. The tributary contribution (based on area) of the watershed between the gauge and the landfill is subtracted from the flow at the gauge to calculate the flow at the MDSL Site. Influent to the pond is controlled to prevent overflow to the Fox River when the river's flow is below 3.3 cubic feet per seconds (cfs). Pond water quality is tested on a regular basis. If water quality limits are exceeded, the extraction system is shut down and not reactivated until pond water quality is within the prescribed limits. The cause of the exceedance is assessed through well-specific analyses. An approach and schedule for addressing the problem is submitted to the WDNR within two weeks from the time the problem is confirmed.

Records and Reporting

Daily operating logs and laboratory records are maintained in accordance with Section 9 and Section 12 of the QAPP, respectively. Operating costs are also compiled and maintained. All Site maintenance activity logs conform with Section 11 of the QAPP and FSP and per the inspection form. Any changes to the process are reported to the WDNR and EPA. Monthly and annual summaries of treatment system operation and maintenance with the groundwater and surface water monitoring reports are submitted to EPA and WDNR. The reports summarize treatment system operation status, operational problems, and corrective actions for the reporting period. From January 2000 to the present, the following O&M activities have occurred at the Site:

- April 17, 2000 - the level transducer cable in the conduit between EW-2 and the electrical panel was replaced. Site maintenance activities including filling in animal

burrows and cleaning debris from culverts were performed.

- June 2000 - during the last five-year review inspection, a beaver dam had been rebuilt on the east side of the culvert at the southeast corner of the landfill, thus raising the water level to the east of the landfill.

- September 2000 - EW-1 was found to be leaking water into the electrical conduit connection from the well. The well was shutdown until the scheduled fall maintenance.

- November 9, 10, 14, and 15, 2000 - the scheduled groundwater extraction system maintenance activities were performed. This involved pulling each pump to inspect, clean and reinstall it. Silt was vacuumed from the bottom of the wells, the extraction wells and piezometers were disinfected with hypochlorite, the level transducer for EW-2 was replaced, the pump discharge pipes in the wells were replaced with HDPE pipe.

- March 21, 2001 - the controls to EW-3 were fixed

- May 16, 2001 - Terra Engineering and Construction Corporation performed maintenance on the extraction system. EW-2 and EW-11 were not operating as the level controllers located in the electrical panels were malfunctioning. These wells were scheduled during the annual fall maintenance as operation of these wells was not necessary to maintain groundwater gradients.

- September 2001 - the GW-EXT-01 valve could not be operated; consequently, no sample was taken of the combined groundwater discharge to the pond.

- October 22, 2001 - CH2M HILL performed the quarterly cap inspection.

- November 28-29, December 6 and 19, 2001 - the scheduled groundwater extraction system maintenance activities were performed. This included removing and cleaning extraction well pumps, pumping silt form extraction wells, chlorinating extraction wells and piezometers, replacing level transducers for EW-2 and EW-3, and recalibrating the level controllers.

- January 16, 2002 - a landfill cap inspection was performed, though snow cover limited the inspection.

- May 2002 - engineering work began to define and correct the slight depressions in the landfill cap that were initially identified during the January 2002 quarterly cap inspection.

- June 2002 - EW-11 level control was recalibrated. The level control wiring was repaired for EWs 1, 2, 3, and 4 need level transducers replaced. In addition, an erosion area was identified along the drainage swale in the middle of the cap.

- July 16, 2002 - quarterly landfill cap inspection was performed.

- September 20-26, 2002 - Terra performed the landfill cap corrective action and other miscellaneous maintenance activities. The cap was regraded to eliminate the depressions and erosion areas on the cap. The valve operator for GW-EXT-O1, which enables sampling of the groundwater discharge into the pond during low flow, was repaired in conjunction with the landfill cap maintenance activities.

- April 29, May 1, and May 8, 2003 - Terra performed maintenance on the groundwater extraction system. This included removing and cleaning extraction well pumps, pumping silt form extraction wells, chlorinating extraction wells and piezometers, and replacing level transducers for EW-3, 4 and 6 and 3, and new level transducer wiring for EWs-2, 6, and 9. The level controller was recalibrated for EW-2.

- September 2003 - the beaver dam blocking the culvert beneath the entrance road to the landfill was removed and mothballs placed out to discourage the dam building.

Pursuant to U.S. EPA approval dated June 3, 2004, the groundwater extraction system was shutdown for 2004 on a probationary basis.

- June 28 and 29, 2004 - monthly monitoring event was performed. This event included supplemental monitoring activities associated with the probationary shutdown of the groundwater extraction system.

- June 29, 2004 - Municipal Well & Pump Co. inspected the extraction well network pumps and controls.

- August 10-11, 2004 - mowing was performed by J. O. Trucking Co. to address small trees and shrubs growing along fence line and long grass.

EPA's projected cost estimates outlined in ROD

	Annual O&M Costs	Associated Technology
WM3	$ 54,130.00	Capping
GW3	$ 90,000.00	GW extraction system
Total	$ 144,130.00	

TABLE 5 - ANNUAL SYSTEM OPERATIONS/MAINTENANCE (O&M) COSTS

Year	Consultant Costs	Contractor Costs	EPA Costs	Insurance Costs	Electrical Costs	Legal Costs	Misc. Costs	Total Costs
2000	$111,607	$27,108	$19,218	$11,588	$1,930	$1,034	$10,953	$169,520
2001	$119,237	$25,833	$21,892	$11,588	$1,298	$7,578	$8,557	$178,549
2002	$109,827	$48,243	$930	$14,487	$2,000	$1,812	$8,931	$186,229 (1)
2003	$65,185	$24,298	$2,016	$18,208	$0	$1,745	$10,685	$122,137
2004	$110,645	$0 (3)	$588	$18,208	$400	$11,198	$9,523	$150,563 (2)
2005	$42,263	$0 (3)	$6,972	$18,258	$400	$1,390	$5,217	$74,500
Annual Average								**$160,272**

Notes:

1 Cap Repair project added to Contractor costs

2 Groundwater extraction system shut off; 2003 consultant costs (CH2M Hill) paid in 2004

3 Probationary shutdown of extraction system; contractor billed through consultants

4 Requested permanent shutdown of extraction system; contractor billed through consultants

V. Progress Since the Last Review

The Five-Year Review Report of September 25, 2000 indicated that the remedy being performed at the Master Disposal Landfill Site complies with the performance standards selected in the September 1990 ROD, and that these performance standards and hence, the remedy, remained protective of human health and the environment.

Based upon the Construction Completion Report and the observations made during the Site inspection in 2000, EPA concluded that the landfill cap and extraction system were fully adequate to protect against inhalation, ingestion and direct contact with the landfill materials. The remedy prevented landfill materials from eroding and migrating offsite as well as prevents water from infiltrating the landfill. The 2000 Review Report indicated that deed restrictions and Site controls required as per the 1992 consent decree to prevent access, excavation, disturbance of the cap, or certain uses of the property, were in place. Since then, further research indicates that no institutional controls were implemented at the Site.

The report noted that the PRPs have conducted monthly maintenance inspections and the necessary corrective actions along with the chemical monitoring required by the consent decree. These activities have been appropriately documented in the monthly progress reports. The recommendations from the September 2000 Five-Year Review Report and the status of these issues are as follows:

1. PRPs will continue O&M of the groundwater extraction system, including the extraction wells and discharge piping network.

Status: Ongoing. The major problem is the frequent breakdown of the water level transducers. These must be replaced or repaired on a regular basis.

2. EPA and PRPs will continue evaluating the effectiveness of extraction wells and systems in place to ensure that the remedy is most efficient at containing contaminants onsite and preventing migration of contaminants offsite.

Status: Ongoing. The remedy appears to be containing contaminants onsite. Since the last five-year review, the PRPs requested that the extraction system be shutdown on a probationary basis for one year with appropriate monitoring during and after the shutdown. Results showed the presence of benzene in a shallow well (PZ-02), at which time, monthly monitoring was conducted to demonstrate whether the levels of benzene are stable. The PRPs have since requested a permanent shutdown of the extraction system and the adoption of a quarterly monitoring schedule for benzene.

3. EPA and the PRPs will continue to evaluate data collected at the Site.

Status: EPA has received data from the PRPs in the requested EDD format from the former PRP consultants (CH2M Hill) through October 2002 and has performed trend analysis on the data. EPA has not received data since 2002 in the requested format to update the trend analysis. This is possibly related to the change of PRP contractors in 2004 as discussed below.

4. EPA will evaluate the need for continuing the annual vegetation survey.

Status: EPA approved the discontinuation of the annual vegetation survey in September 2000 at the surveys did not indicate any adverse impacts on the wetland plant communities from the MDSL Site.

5. EPA will assess the need for the second operable unit ROD to address the remaining groundwater remedy goals, or whether this can be achieved through an Explanation of Significant Differences.

Status: The overall intent of the RA was to contain the groundwater plume and restore the aquifer to federal and state groundwater standards. The presence of the surrounding, environmentally significant wetlands posed a problem in that an overly aggressive groundwater restoration effort could dry out and destroy these wetlands. Thus, the RA's primary focus was to control the landfill source and any portions of the contaminated groundwater that were possibly in direct contact with the landfill materials. As such, this was an interim groundwater remedy; attainment of federal/state groundwater criteria in the aquifer was not a goal of this operable unit. For groundwater protection measures, pertinent federal/state regulations would

include groundwater restoration criteria, location-specific construction measures and effluent limitations upon treatment. This interim measure attained the latter two criteria. The purpose of OU2 was to ultimately define the remediation standards and the restoration time frame of the contaminated aquifer. Preliminary research indicates a decision document in the form of a ROD or ROD Amendment would best accomplish this.

Because these above-mentioned remediation criteria are not currently in place, a decision by EPA and WDNR to permanently shutting down the groundwater extraction system would be premature and without basis. While there may be sufficient data, EPA has not had the opportunity to make such a determination, nor to integrate the more recent (since 2002) groundwater monitoring and elevation data into its geostatistical analyses for the Site. It is necessary to produce a decision document, such as a ROD or ROD amendment, which states the groundwater restoration criteria and the method for determining the time frame and how cleanup criteria can be met in conjunction with other measures of monitoring and extraction system operation.

Since the September 2000 five-year review report was issued, several changes to the monitoring program have been implemented as a result of continual evaluation of the treatment system and monitoring program. In addition, the PRP group requested in March 2004 to change its project coordinator and environmental consultant from CH2M Hill of Milwaukee, WI (which served during the RD/RA and the first several years of O&M), to STS Consultants Ltd, 11425 West Lake Park Drive, Milwaukee, WI. Further, to reduce project laboratory costs, STS requested EPA and WDNR approval to change the project analytical laboratory from Columbia Analytical Services, Inc. of Redding, California to En Chem, 1241 Bellevue Street, Green Bay, WI. En Chem, now a division of Pace Analytical Services, is certified as a commercial laboratory in the state of Wisconsin for all analytes measured at the Site.

TABLE 6 - ACTIONS TAKEN SINCE THE LAST FIVE-YEAR REVIEW

Issues from Previous Review	Recommendations/ Follow-up Actions	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
Continue evaluating the effectiveness of extraction well system to ensure that the migration of contaminants off-site is efficiently prevented.	PRPs should provide most recent groundwater data in a format EPA and WDNR can use for geostatistical analysis	EPA, WDNR, and PRPs	Ongoing	Information regarding the data formats was sent by EPA to the current PRP consultants (STS Consultants)	8/2005
Evaluate the need for continuing the annual vegetation survey.	None	EPA, WDNR and PRPs	Two years from start of remedy	EPA approved discontinuing the annual vegetation survey	9/2000

Issues from Previous Review	Recommendations/ Follow-up Actions	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
Assess the need for the second operable unit ROD, ROD amendment, or ESD for the remaining groundwater restoration criteria.	Determine the appropriate vehicle for setting cleanup criteria. Consult with WDNR on cleanup criteria	EPA	12/2006	Discussed issue with Office of Regional Counsel and Superfund program; a ROD or ROD Amendment is the probable approach.	8/2005
Assess the status of institutional controls (ICs) at the Site *	Instruct PRPs to perform an IC investigation/study for the Site.	EPA, PRPs	8/20/2005	RPM sent letter on 7/2/05 to PRPs instructing them to perform a study. The study was largely completed by 8/31/2005.	8/2005

* this issue was not identified in the September 2000 Report, however ICs had not been, and are still not implemented on the Site property.

VI. Five-Year Review Process

Administrative Components

The EPA legal and community involvement staff, the WDNR and the MDSL Site PRP Trust III group and technical and legal consultants were notified of the five-year review Site inspection in March 2005. The RPM established the components of the Review, which included:

- Community Notification
- Document Review
- Data Review
- Site Inspection/Community Interviews
- Five-Year Review Report Development and Review

The review Site inspection date was coordinated among the various representatives from EPA, WDNR and the PRP group and set for April 19, 2005. The City and Town of Brookfield were notified of the initiation of the second five-year review on May 26, 2005 via a notice that was placed in the local paper.

The MDSL five-year review team was led by the EPA Superfund Remedial Project Manager (RPM) Sheila Sullivan and included EPA's Community Information Coordinator (CIC) Briana Bill and EPA Site attorney Jerome Kujawa, WDNR Site Manager Thomas Wentland, PRP

Trust Technical Chairperson John Mourand of Briggs & Stratton, previous PRP Trust Technical Chairperson Herbert Pirkey of A.O. Smith, attorneys Rachel Schneider and Nancy Peterson of Quarles & Brady, and STS Consultants Project Managers Mark Mejac and Jeanne Tarvin.

Community Notification and Involvement

Activities to involve the community in the five-year review process were initiated in March 2005 in the form of a notification to the Region 5 Superfund CIC for the MDSL Site, Briana Bill. A notice announcing the initiation of the five-year review process and soliciting Site information and concerns from the community was published on March 26, 2005 in the Brookfield News, a weekly newspaper serving the City and Town of Brookfield (Attachment 3).

Historically, community concern regarding the MDSL Site peaked during the time in which the Site was in full operation. Since the Site operation ceased in 1982, the level of concern has declined and has since been relatively low. Most Site-related concern focused on the potential impact of surface water runoff from the landfill degrading the water quality of the Fox River, a recreational resource to the citizens of Waukesha County. Residents fish along the Fox River and the River flows by many residential subdivisions within the City and Town of Brookfield. Other concerns have involved the potential impact of the MDSL Site on the ecological communities of the surrounding wetlands, particularly with respect to the bird rookeries, as well as the shortage of adequate sanitary landfills in the county. The September 2000 five year review indicated no issues of community concern.

There are four Superfund NPL sites in Waukesha County Wisconsin. Current local environmental concerns pertain to proposed a residential development in the immediate vicinity of the Brookfield Sanitary Landfill, another Superfund NPL site. Brookfield population is relatively well-informed. In 2000, 94% of city residents age 25 and over had graduated from high school or pursued higher education. Another 49% had achieved a college or graduate degree. Brookfield's labor force consists largely of two categories; managerial and professional, and sales and office account for about 80% of the residents.

Past community relations activities for the Site have included a public meeting held July 16, 1990 at the completion of the RI/FS process to present the RI results and the Proposed Plan for the Site cleanup. Fact sheets were routinely distributed to update the community of the cleanup progress. EPA has also maintained an administrative record document repository in the community throughout the cleanup process at the Brookfield Library, 1900 N. Calhoun Road, Brookfield.

Document Review

The five-year review included a review of the relevant documents such as the RI/FS, RD/RA, SOWs, ROD, all enforcement documents, state groundwater quality standards, and risk-based levels to protect human health and the environment. Also post-RA documents such as the

PCOR, first five-year review, and applicable EPA and WDNR guidance. The comprehensive list of documents is included as Attachment 4.

Data Review

All data since the previous September 2000 five year review were evaluated to discern relevant trends, closeness to achieving cleanup criteria for the contaminants of concern, and possible changes to the current monitoring schedules. The data reviewed included groundwater and surface water.

1) Groundwater/Monitoring Well Network

In accordance with the consent decree, a groundwater monitoring network was implemented in October 1996 to monitor fate, transport, and effectiveness of the groundwater capture system. In 2000, EPA and WDNR agreed to reduce groundwater sampling frequency from quarterly to annually. Thirty monitoring wells (and piezometers) and 11 extraction wells are monitored quarterly for water levels. Twenty-three wells are sampled annually for the contaminants of concern.

Annual groundwater monitoring results are available from October 1997, 1998, 1999, 2000, 2001, 2002, 2003, and 2004 (Attachments 6, 1, and 2). These results reveal that groundwater samples from Site monitoring wells did not contain 1,1-DCE or TCE, two of the chemicals of concern identified in the 1990 ROD. In addition, except for benzene, none of the remaining chemicals of concern identified in the ROD (cadmium, chromium, copper, lead, methylene chloride, toluene, and xylenes) were detected in the 1997-2004 groundwater samples from the Site monitoring wells at concentrations greater than their respective ARARs (WAC Chapter NR 140 enforcement standards [ESs] or EPA Safe Drinking Water Act Maximum Contaminant Levels [MCLs]), as shown below:

TABLE 7 - COMPARISON OF MAXIMUM GROUNDWATER CONCENTRATIONS WITH STATE AND FEDERAL CRITERIA

Chemical of Concern	1997 - 2004	ARARS				
	Maximum Detected Concentration in Site Groundwater	MCL	ES	PAL	2002 NRWQC for human health protection consumption of water + organism/ organism only	2002 NRWQC for Aquatic life protection acute/chronic
Arsenic	34.7J	50	50	5	0.018/0.14	340/150
Cadmium	4.6J	10	10/5	1/0.5	-----	2.0/0.25
Chromium	11.2 (PZ-02)	100	100	10	-----	16/11

Copper	5J	1,300	1,300	130	1,300/---	13/9.0
Lead	3.41	50	50/15	5/1.5	------	65/2.5
Methylene chloride	0.79J	5	5	0.5	4.6/590	-----
Benzene	9.6 (PZ-02)	5	5	0.5	2.2/51	------
Toluene	0.77J	1,000	343	200	6,800/200,000	------
Xylenes	1	10,000	620	1,000	-----	------
TCE	ND	5	5	0.5	2.5/30	------
1,1-DCE	ND	7	7	0.7	0.057/3.2	-----

Note: All units are reported in micrograms per liter (ug/L); "J" represents laboratory qualified estimated values.

Monthly monitoring for water quality parameters and select organic and metal compounds is conducted on the extraction well manifold discharge point (GW-EXT-01), the furthest extraction well from the discharge point (EW-11), and the pond. Annual acute toxicity testing has been performed, with one failure caused by ammonia in seven years of system operation. Prior to January 2000, quarterly acute biotoxicity testing was performed on the discharge.

Evaluation of Existing Groundwater Extraction System

Construction of the groundwater extraction system was performed in 1996 and 1997, and system operation commenced in April 1997. The groundwater extraction system is designed to provide hydraulic control at the downgradient boundary of the landfill, as opposed to removal of contaminant mass from the saturated zone beneath the landfill to prevent dewatering of the wetlands. Based upon groundwater elevation information in the September 2000 Five Year Review Report, the groundwater extraction system results in a cone of depression along the southern edge of the landfill which reduces offsite migration of groundwater. This observation was supported by the May 1999 Two-Year Evaluation Report, which showed very low horizontal hydraulic gradients (approximately 0.0001 ft/ft) for both the January and July 1998 monitoring events-- similar to hydraulic gradients determined during preliminary design of the extraction system.

Based on the relatively slow groundwater flow velocities and negligible changes in horizontal hydraulic gradients associated with the groundwater extraction system beneath most of the landfill area, STS requested on May 7, 2004 a probationary shutdown of the existing extraction system and provided technical justification concluding that this action would not sufficiently modify the local hydrogeologic flow system to result in adverse impact to human health and the environment. STS recommended post-shutdown groundwater monitoring for one-year to document no adverse impact to human health and the environment resulting from the shutdown. The groundwater extraction system was shut down from October 2003 through October

2004 at which time, a full year of post-shutdown groundwater data was collected.

Concurrent with probationary extraction system shutdown, an additional monitoring event for the COCs was conducted in June 2004 to evaluate potential changes in groundwater quality resulting from the shutdown of the extraction system. The additional groundwater monitoring event included sampling of 15 monitoring wells located hydraulically cross-gradient or downgradient of the Site extraction well network and included: B-01, B-05, B-44, B-50, B-58, B-60, EW-11, B-45, OB-081, B-46, OB-08D, OB-09D, B-43, PZ-02, and EW-01 (figure 13).

During the probationary shutdown, however, monthly monitoring of extracted groundwater and surface water to assess the quality of discharge to the pond and the wetlands was not conducted since no extraction was occurring. Annual surface water monitoring of the pond and Fox River receiving point locations to evaluate the impact of extracted groundwater discharge to the pond and the Fox River was also discontinued for the same reason.

To evaluate the effect of groundwater pumping conditions on hydraulic gradients, horizontal hydraulic gradients were determined between the upgradient (north) and downgradient (south) boundaries of the former landfill. On behalf of its client, STS concluded in its report entitled: "Technical Justification and Request for a Permanent Shutdown of Groundwater Extraction System and Groundwater Monitoring Plan Modifications, Master Disposal Service Landfill, Brookfield, Wisconsin, May 6, 2005" that the A1 zone results showed low horizontal hydraulic gradients for both the July 2003 and July 2004 monitoring events (approximately 0.0024 ft/ft and 0.00044 ft/ft, respectively). The A2 zone results also showed very low horizontal hydraulic gradients for both monitoring events (approximately 0.0022 ft/ft in July 2003 and 0.0019 ft/ft in July 2004). The A1 and A2 zones indicate a regional groundwater flow toward the southwest, regardless of the presence or absence of groundwater pumping (see figures 14-15). Based on the relatively slow groundwater flow velocities and negligible changes in horizontal hydraulic gradients associated with the groundwater extraction system beneath the landfill, the PRP Trust III group concluded that shutdown of the Site groundwater extraction system would not sufficiently affect the local hydrogeologic flow system to result in adverse impact to human health and the environment.

Annual Groundwater Monitoring

With the exception of Aroclor 1248 (PCB), cyanide, and bis(2-ethylhexyl) phthalate, groundwater samples collected as part of the October 2004 annual groundwater monitoring were analyzed for the existing suite of monitored parameters. Aroclor 1248 and cyanide have not been detected in the groundwater samples collected as part of the 1997 through 2003 groundwater monitoring period. Bis(2-ethylhexyl) phthalate has only been detected at low concentrations on two occasions in groundwater samples collected during the 1997- 2003 groundwater monitoring period, and is not a regulated compound in Wisconsin for groundwater. STS requested these compounds be dropped from the groundwater monitoring program.

Of the 176 analyses conducted as part of the June 2004 sampling event (16 groundwater samples and 11 analyses per sample), well PZ-02 showed benzene at 8.1 ug/L, which exceeded its

ES of 5 ug/L. No chlorinated VOCs or inorganic compounds were detected above a PAL at any of the 15 wells sampled.

Based on the concentration, frequency of detection, location, shallow depth and absence of receptors, STS recommended continued probationary shutdown of the Site groundwater extraction system in July 2004. STS also recommended continued groundwater sampling of PZ-02 for benzene as part of the ongoing monthly monitoring in order to determine if benzene concentrations in shallow groundwater at PZ-02 were stable. Subsequently, PZ-02 was sampled monthly through October 2004.

STS concluded from the October 2004 sampling that the only remaining COCs that were detected in the October 2004 groundwater samples (which were collected 12 months after shutdown of the groundwater extraction system) were arsenic and benzene. Consistent with the 1997-2003 groundwater data, the October 2004 maximum detected arsenic concentration (10.7 ug/L) was substantially less than WAC Chapter NR 140 ES and EPA MCL of 50 ug/L.

The detected benzene concentration (6.8 ug/L) in well PZ-02 was the only detected benzene concentration from the October 2004 annual monitoring event. Well PZ-02 is located adjacent to (as opposed to hydraulically downgradient of) the MDSL Site, and within the design management zone of the landfill (see figure 13). Well PZ-02 is approximately 21 feet deep, (within the A1 aquifer) and had not been previously sampled as part of the annual Site groundwater monitoring program. The post-shutdown monthly detected benzene concentrations in groundwater samples collected from PZ-02 are as follows:

TABLE 8 - BENZENE LEVELS IN PZ-02

Sample Date	Benzene Concentration in ug/L
June 2004	8.1
July 2004	8.9
August 2004	8.9
September 2004	9.1
October 2004	6.8
December 2004	9.6
January 2005	5.9
February 2005	8.4
March 2005	7.4

The available groundwater monitoring information provided above indicates that benzene concentrations in shallow groundwater at PZ-02 are relatively low and appear to be stable following the shutdown of the groundwater extraction system. Benzene was not detected in any

other monitoring well, including wells downgradient of PZ-02 and wells in the deeper A2 and A3 aquifers. Therefore, natural attenuation of the benzene may be occurring due to the source control measures. The detected benzene concentration in PZ-02 does not pose an apparent or immediate public health risk, as the nearest residential well is historically known to be located approximately one mile south of the MDSL Site.

Site Inspection

A site inspection was conducted by members of the MDSL five-year review team on April 19, 2005. The purpose of the inspection was to assess the protectiveness of the remedy, including the condition of the fencing and posted signs to restrict access, and the condition of the Site itself, i.e., the landfill cover, groundwater extraction and treatment system, monitoring wells, the surrounding land and the institutional controls. Representatives included the EPA RPM Sheila Sullivan and EPA Site attorney Jerome Kujawa, WDNR project manager Thomas Wentland, PRP Trust Technical Chairperson John Mourand of Briggs & Stratton, Herbert Pirkey of A.O. Smith, attorney Rachel Schneider of Quarles & Brady, and STS Consultants Project Managers Mark Mejac and Jeanne Tarvin. The representatives met at the Briggs & Stratton Headquarters , 12301 W. Wirth Street, Milwaukee, WI. The representatives were also interviewed as part of the community interview process. During the inspection, the representatives discussed Site and community issues. The completed inspection checklist is provided as Attachment 6.

The weather conditions on April 19th were sunny, warm and very windy; the air temperature was about 72°F. The landfill cover grasses appeared to be thick and well-maintained. The representatives walked the Site perimeter, noting the condition of the fence, signs and gates. The fencing was found to be in good condition. The RPM indicated that there is only one large sign on the main gate and no posting at intervals. A recommendation was made to increase the number of signs. The extraction and monitoring wells were also checked during the inspection and were found to be in good condition; no sign of vandalism or tampering was evident. At the time of the inspection, EW-1, EW-3, EW-4, and EW-8 required new level controllers. Municipal Well and Pump Co. was in the process of preparing alternatives to implement corrective actions. As of July, this was still ongoing. The electrical panels and landfill gas vents were in good condition. One O&M problem involves the fact that the transducers tend to break down frequently and are in need of constant repair or replacement.

An old concrete block building currently used to store old automotive equipment sits within the Site perimeter fence. The building was used as a repair garage when the Site operated as a landfill. After the Site was placed on the NPL, the building was leased out for the repair of vehicles. The building was slated for demolition in order to build an onsite groundwater treatment plant under the preliminary remedial design, however, a revised treatment scheme no longer included a treatment building. After the original owners passed away, the building and property on which it sits were maintained by the decedents' son. The Town of Brookfield increased its property taxes and the property became zoned as residential. A sign was visible on the front fence indicating that the property is zoned residential. See Attachment 7 for Site inspection photos.

Interviews

Since the last five-year review, there has been minimal to no community interest concerning the Site. No contact has been initiated with the Town and City of Brookfield. The only time that public inquiries were made about the Site was during the remedial construction when there was concern regarding the wetlands filling in. The parties also indicated that private wells are in use within 1.5 miles downgradient of the Site and these residents are not required to connect to the municipal supply. A subsequent discussion with Mr. Terry Heidmann, Sanitary System Superintendent, Town of Brookfield, indicated that the Town does not provide water service to the Site environs; all residents in the general area are on private wells. The closest residents downgradient of the Site include several subdivisions such as Gatewood Estates and Holly Crest, which are just off of Springdale Road. However, these properties are over 2.5 miles from the Site; the intervening land includes an industrial park and railroad tracks.

With regard to the institutional controls at the Site, EPA recently initiated a nationwide effort to seek the assistance of PRPs in evaluating ICs for the sites by undertaking an IC investigation. The goals of the IC investigation are: a) to evaluate whether institutional controls currently exist that adequately implement the restrictions described above; b) to identify and recommend any corrective measures to existing ICs necessary for their effectiveness; and, c) to recommend any new or additional ICs necessary to achieve and maintain the land and groundwater use restrictions and performance standards described above.

A letter to this effect, seeking the assistance of the PRP Trust to perform a study for the entire historical Master Disposal Service Landfill Superfund Site was sent on July 1, 2005 in order for the results to be included in this report. Pursuant to the U.S. v. Brake, Clutch, & Drum Service, et al., Civil Action Nos. 91-C-1219 and 91-C-1388 ("consent decree"), the RA for the Site included imposed access and use restrictions (Paragraph 9 of Section V) because the Site remedy does not allow for unlimited use and unrestricted exposure. The long-term protectiveness, effectiveness, and integrity of the remedy depends on compliance with ICs. that implement land and groundwater restrictions

Under Paragraphs 16 of Section VII (Additional Work and Modification of the SOW) and Paragraph 19 of Section VIII (U.S. EPA Periodic Review to assure Protection of Human Health and the Environment) of the consent decree, the PRP Trust agreed to implement studies and investigations in order to permit EPA to better assess whether the remedial action is protective of human health and the environment. The PRP Trust provided EPA with a copy of the IC study which indicated that, to date, no deed restrictions have been put in place to restrict access to and use of the Site and the surrounding property for any purposes that may potentially impair the effectiveness of the remedy (see Appendix).

During the Site inspection, interviews were also held with the PRP Trust representatives and WDNR Site Manager. The issues raised by the PRP Trust during the five-year review inspection included: 1) the request to change project analytical laboratories from Redding to En

Chem, as previously mentioned; 2) the request to modify the benzene monitoring in well PZ-02 from monthly to quarterly; 3) the request to shut down the groundwater extraction system permanently, based on the data collected during the one-year probationary shutdown; and, 4) the request to close out the groundwater extraction interim remedial remedy (OU2).

VII. Technical Assessment

Question A: ***Is the remedy functioning as intended by the decision documents?***

Remedial Action Performance

Based on a review of relevant documents, applicable or relevant and appropriate requirements (ARARs), risk assumptions, and the results of the Site inspection, all portions of the remedy, except for the institutional controls, currently appear to be functioning as intended by the ROD and attendant documents and are expected to continue in this manner. The effectiveness and progress of the remedy has been tracked through the monitoring program. Site monitoring in accordance with the requirements listed in Table 2 has been performed since October 1996 and encompasses data from 10 comprehensive monitoring events. These data indicate that the MDSL Site presently does not pose an immediate threat to human health or the environment. While Site access controls are in place, without the implementation of land use controls such as deed restrictions the parties cannot guarantee that the remedy will remain protective in the future.

The RA for this Site consisted of a Source Control Operable Unit, whose goal was containment rather than to achieve groundwater restoration quality standards. The RA consisted of: placement of a clay/soil cap and an active venting system over the fill material to reduce infiltration into the waste mass; installation of a groundwater extraction and treatment system to remove both organic and inorganic contamination from a portion of the contaminated alluvial groundwater beneath the Site; conducting monitoring of groundwater, surface water, water budget/ hydrology and wetland to assess the quality and quantity of area groundwater, surface water, and wetlands; and, impose access and use restrictions. It was anticipated that a second operable unit would focus on the restoration of the groundwater (both upper alluvium aquifers and the dolomite aquifer beneath the alluvium) to comply with State and Federal ARARs, and on impacts to the wetlands, Fox River, and the environment. The remedy for the second operable unit was anticipated to define the remediation standards and the restoration time frame of the contaminated aquifer.

All construction activities have been completed and the RA (groundwater extraction and treatment) is ongoing. The Site poses no apparent public health hazard. The contaminated areas of this Site included the soil in the former disposal area and the groundwater. The waste mass has been covered with a five-foot soil cap (including two feet of rooting soil and two feet of clay) in compliance with WAC NR 504.07 landfill closure requirements and NR 506.08 to reduce groundwater infiltration and eliminate the potential for dermal contact with the waste mass. The

waste mass is not in contact with the shallow-most alluvial aquifer. The residual contamination from this area is collected via the groundwater extraction and discharged to the onsite pond, which eventually feeds the surrounding wetlands and the Fox River. As previously described, Module 2 of the monitoring program (extracted groundwater and surface water monitoring) evaluates the water quality of discharges from the groundwater extraction system and the acute toxicity and water quality of pond discharges to the wetlands. The pond treatment consists of aeration and settling, which was demonstrated to meet WDNR standards for discharge to the Fox River.

Monthly monitoring for water quality parameters and select organic and metal compounds is conducted on the extraction well manifold discharge point (GW-EXT-01), the furthest extraction well from the discharge point (EW-11), and the pond. Annual acute toxicity testing has been performed, with only one failure in the seven years of operation caused by ammonia. Groundwater which is extracted, treated and subsequently discharged to the drainage channels adjacent to the Site, and ultimately to the Fox River, meets the substantive requirements of Section 402 of the Clean Water Act National Pollutant Discharge Elimination System (NPDES, 40 CFR 122, 125) and does not exceed the Wisconsin Pollutant Discharge Elimination System (WPDES) limits established by the State of Wisconsin (NR 102, NR 105, NR 106, and NR 207 WAC). Groundwater extraction and monitoring is in compliance with Wisconsin Groundwater Monitoring and Recovery Requirements (NR 141, NR 181, WAC).

Vegetation surveys of wetland communities showed some changes in the composition and nature of wetland plant communities as documented in Table 3. In several areas of the wetlands, some fluctuation in water levels, which may be seasonal in nature, has been documented. As no adverse impacts to the wetlands and vegetation were seen, EPA approved the elimination of annual wetland surveys for the MDSL Site in September 2000.

As with the source control (containment) OU1, the effectiveness and progress of the groundwater cleanup OU, i.e., the interim remedial measure of groundwater extraction and treatment, has been closely tracked via the annual groundwater quality monitoring events, monthly water level measurements, and ground water extraction manifold and pond water monitoring as detailed in Tables 3-4. However, unlike OU1, no formal cleanup criteria were selected for groundwater in OU2, although the intent of the ROD was that the groundwater ultimately meet federal and/or state groundwater quality requirements as the ROD stated:

> "... As provided for in EPA's "Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites (OSWER Directive No. 9283.1-2; December 1988), Clean-up levels for the site typically are not established since interim actions are not final. Thus, an interim ground water action need not achieve chemical-specific ARARS in groundwater. Therefore no chemical specific cleanup standards will be established at this time for the existing contaminant plume. The final operable unit for ground water at this Site will ensure that the federal clean-up standards or the more stringent State of Wisconsin ground water quality standards established in Chapter 160, Wisconsin Statutes, and Chapter NR 140, WAG will be complied with for the entire Site, or justification provided if either the federal or State standards are waived."

necessary ICs required to effectuate the RA and protect public health and the environment would consist of the following land use restrictions and conditions:

1) No interference with construction, O&M, monitoring and efficacy of any components or improvements resulting from the RA;

2) No extraction, consumption or other use of groundwater beneath the Site, except for the work specified in the RA;

3) No agricultural, recreational, residential, commercial, or industrial use of the landfill cap area or other areas containing RA components, except monitoring wells, are located. This includes excavation, grading, or other landfill capping operations and any construction of buildings, other than for the purpose of implementing the RA;

4) No construction, installation, or use of any buildings, wells, roads or structures on the facility property that could affect the physical integrity, O&M or efficacy of the remedy.

The PRP Trust was to secure deed restrictions which incorporated the preceding four land use restrictions. The restrictions were to run with the land and bind any persons acquiring title or any legal interest in the property.

At present, there are no deed restrictions pertaining to the MDSL Site property on file at the Waukesha County Register of Deeds. According to Waukesha County Geographic Information System (GIS) maps, the 40-acre parcel (of which 26 acres is occupied by the landfill) was titled to Master Disposal Inc. The current deed record holder is Western Disposal Landfill, Inc. The corporation principal shareholder was Mr. John Nowacki. His wife, Charlotte Nowacki was a vice president. The Nowackis never placed deed restrictions on the property, however property access for performance of the RD/RA was negotiated by EPA. The Master Disposal Inc. corporation was administratively dissolved in 1993. The Nowackis are since deceased, however, according to Waukesha County assessor data, the decedents' son Randy Nowacki, has continued to pay the property taxes.

A subparcel of the property (about 0.61 acres) fronts West Capitol Drive and contains a 6,160 square foot garage building built in 1980. According to the County GIS data, as of 2000, the entire parcel, including the subparcel was classified as unused or open, and the surrounding parcels were classified as wetlands and environmental corridors (see figure 12). As of 2005 and possibly 2004, the tax listing details indicate the subparcel classification was changed to residential. In fact, the property owner has posted a large white sign indicating that the property is zoned residential on the fence fronting Capitol Drive. The projected land use maps for 2010 indicate that the subparcel will be zoned low density residential; the wetland parcel directly east of the property will be zoned recreational; and the remaining wetlands surrounding the Site will remain wetlands and environmental corridors. The nearest commercial area will be located 900 feet from the southeast corner of the landfill. U.S. EPA expects that it will propose in a future

ROD or ROD Amendment that the subparcel on the Site, currently zoned as residential by the local government, be redesignated as non-residential. U.S. EPA will designate an appropriate use for the subparcel.

As mentioned, Site access controls are in place and consist of a continuous 6-foot high cyclone Site perimeter fence and three locked and chained gates. The main gate is at the southeast corner of the property. Two other gates are located at the southwest and northwest corners of the landfill. The main gate is accessible from Capitol Drive. One small sign is posted on the gate which reads: "Danger, Do Not Enter"(see Attachment 7). No other signs are posted at intervals around the perimeter. Observations made on April 19, 2005 indicate that the perimeter fence and sign is being adequately maintained; however, the Agencies recommended that signs be replaced with more visible and accurate information. There is no evidence of vandalism or trespassing activity at the Site. The interviews conducted on April 19, 2005 with the PRP group indicated that no issues or problems have arisen with respect to the property and that no trespassing has been witnessed. The EPA and WDNR representatives recommended that additional signs be posted.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?

Changes in Standards and TBCs

There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy. As previously discussed, there have been some changes in the cleanup standards identified in the ROD. These changes have occurred since the first five year review of September 2000 and are discussed below.

Chemical-Specific ARARs

The chemical-specific ARARs for the each of the affected Site media are described below. No new classes of potential chemical-specific ARARs were noted since the ROD. While the chemical-specific criteria for surface water were set at the time of the ROD, some of the chemical specific regulatory and guidance levels have been amended since the ROD and/or last five-year review.

Surface Water

The actual chemical-specific ARARs are discharge standards pertaining to surface water are the following:

- Water Quality Criteria (AWQC), 40 CFR. Part 131 Quality Criteria for Water, 1986.
- Surface Water Quality Standards (NR 102, NR 105, NR 106 WAC)

Additionally, EPA revised 15 human health water quality criteria based on the Agency's methodology for deriving national recommended water quality criteria for the protection of human health (EPA-822-B-00-004, October 2000). Three of these 15 chemicals, i.e., 1,1-DCE, toluene,

and thallium have been found at the Site. The methodology incorporates advances in cancer and non cancer risk assessments, exposure assessment and estimates of bioaccumulation in fish tissue.

Air

The actual chemical-specific ARARs are discharge standards pertaining to air are the following:

- Prohibition of Air Contaminants which Adversely Affect Human Health and the Environment (NR 404, NR 415, NR 445 WAC). As mentioned, air quality from the landfill gas vents is no longer monitored after previous monitoring data demonstrated compliance with air quality standards.

Groundwater

Groundwater which is extracted, treated and subsequently discharged must meet the substantive requirements of NPDES, 40 CFR 122, 125 and the Wisconsin Pollutant Discharge Elimination System (WPDES). Discharge of treated groundwater to the drainage channels adjacent to the Site, and ultimately to the Fox River must meet the substantive requirements of Section 402 of the Clean Water Act and must not exceed discharge limits established by the State of Wisconsin (NR 102, NR 105, NR 106, and NR 207 WAC). Groundwater extraction and monitoring is done in compliance with Wisconsin Groundwater Monitoring and Recovery Requirements (NR 141, NR 181, WAC) Effluent limitations are noted in the ROD.

As noted, the groundwater extraction and treatment operable unit is an interim and not a final remedy. The purpose of the interim remedy was to contain the plume of contaminated groundwater while EPA, in consultation with the State of Wisconsin, determined how best to address the groundwater contamination while maximizing protection of the wetlands. Because restoration of the aquifer was not a goal of this operable unit, the interim groundwater remedy has not met all "functional"ARARS, specifically National Primary and Secondary Drinking Water Standards (40 CFR 141, 143) and Wisconsin Groundwater Quality Standards (NR 140, Wis. Stats. WAC) alluded to in the 1990 ROD. Because a sufficient amount of data have now been collected since the implementation of the RA, it is now possible for EPA to prepare a decision document in consultation with the WDNR, in order to set criteria for groundwater restoration.

Wisconsin PALs and ESs continue to define acceptable groundwater concentrations at groundwater remediation sites in the State of Wisconsin, however, an exceedance of a PAL does not necessarily trigger remedial action as long as protectiveness is maintained. Adhering to groundwater restoration criteria, once they are determined by the agencies, will be critical at the MDSL Site because institutional controls prohibiting the use of groundwater at the Site for any and all current and future purposes have not been implemented.

Some revisions to the chemical-specific PALs have occurred since the 1988 groundwater quality standards were issued by WDNR and identified as potential future groundwater ARARs in the 1990 ROD. The more recent 2001 PAL update was assessed to determine whether these were more or less stringent than the 1988 PALs with respect to the groundwater contaminants at the

MDSL Site. Compared to the 1988 PALs, the 2001 PALS are less stringent for benzene and chromium and more stringent for cadmium, copper, and lead. The previously unregulated metals (nickel and thallium) were assigned PALs in 2001 (see Table 9). These changes do not affect the remedy at this time as groundwater restoration criteria have not been set. The chemicals detected at the Site through the time of the 1990 ROD remain subject to the ARARs identified at that time; however with respect to groundwater ARARs, the most recent Wisconsin Groundwater Quality Standards under NR 140, WAC and Federal MCLs will apply as per the OU2 final decision document.

Table 9 shows the changes in chemical-specific standards for the contaminants found at the Site.

TABLE 9 - CHANGES IN CHEMICAL-SPECIFIC STANDARDS

Contaminant	Media	Cleanup Level [d]	Standard (PAL/ ES) (ug/L)		AWQC for human health protection from consumption of water +organism/ organism only	Citation/Year
Arsenic	Ground water	None Established	Previous	50		SDWA MCL/
			New [a]	10		SDWA MCL
			Previous	5		*NR 140.28 WAC/ 1988*
			New	1		*NR 140.28 WAC/ 2001*
Nickel	Ground water	None Established	Previous	---		*NR 140.28 WAC/ 1988*
			New	20 / 100		*NR 140.28 WAC/ 2001*
Thallium	Ground water	None Established	Previous	---		*NR 140.28 WAC/ 1988*
			New	0.4/2		*NR 140.28 WAC/ 2001*
	Surface Water	None Established	Previous		1.7/6.3	AWQC 2002
			New		0.24/0.47	AWQC 2003
Cadmium	Ground water	None Established	Previous	1/10		*NR 140.28 WAC/ 1988*
			New	0.5/5		*NR 140.28 WAC/ 2001*
Copper	Ground water	None Established	Previous	500/1,000		*NR 140.28 WAC/ 1988*
			New	130/1,300		*NR 140.28 WAC/ 2001*
Lead	Ground water	None Established	Previous	5/50		*NR 140.28 WAC/ 1988*
			New	1.5/15		*NR 140.28 WAC/ 2001*

Chromium	Ground water	None Established	Previous	0.005/0.05		*NR 140.28 WAC/ 1988*
			New	0.01/0.1		*NR 140.28 WAC/ 2001*
Antimony	Surface water	13,000	Previous	4,300		AWQC 1998
			New	640		AWQC 2002 [c]
Benzene	Surface water	22,000	Previous		1.2/71	AWQC 1998
			New		2.2/51	AWQC/ 2003
Methylene Chloride	Ground water	NA	Previous	----		SDWA 1995
			New	5		
	Surface water	220,000	Previous		4.7/1600	AWQC/ 1998
			New		4.6/590	AWQC/ 2002
Bis(2-ethyl-hexyl)phthalate	Surface water	11,000	Previous	5.9		AWQC/ 1998
			New	2.2		AWQC/ 2002 [b c]
1,1-DCE	Surface water	30,000	Previous		0.057/3.2	AWQC/ 2002
			New		330/7100	AWQC/ 2003
Toluene	Surface water	17,000	Previous		6,800/200,000	AWQC/ 2002
			New		1,300/15,000	AWQC/ 2003

a - The new arsenic MCL will take effect January 23, 2006
b - Criterion was revised to reflect EPA's RfD as stated in IRIS on May 17, 2002, based on 10^{-6} risk
c - Criterion refers to protectiveness of human health due to fish consumption
d - For groundwater quality, no remediation criteria established yet. All surface water criteria are daily maximum concentration allowable based on the Fox River assimilative capacity.

Location-Specific ARARs

Applicable location-specific ARARs included the following:

- Protection of Wetlands (Exec. Order No. 11,990, 40 CFR 6.302(a) and Appendix A)
- Floodplain Management (Exec. Order No. 11,988, 40 CFR 6.302(b) and Appendix A; CWA Sect. 404) These require action to avoid or minimize adverse impacts on wetlands and to preserve and enhance natural values of wetlands and floodplains.
- Guidelines for Specifications of Disposal Sites for Dredged or Fill Material (40 CFR 230)
- Protection of Wetlands (NR 1.95, NR 115, NR 117 WAC)
- Protection of Lakes and Streams (NR 102, 103 WAC)
- Floodplain Management (NR 116 WAC)

The 1990 ROD also specified ICs in the form of a deed restriction placed on the Site and

adjacent property in order to prevent all uses of the groundwater beneath the Site, to prohibit use of the property or activities at the property that would interfere with the implementation or effectiveness of the RA or any of its components, and to prohibit residential use of the property. This would be considered a location-specific ARAR. These ICs, however, have not been implemented as per the 1992 consent decree.

Action-Specific ARARs and TBCs

These ARARs and TBCs reported in the ROD relate to waste handling and management during the RA and the design, construction and operation of solid waste landfills. The major ARARs are listed below. There have been no changes in these requirements which impact the protectiveness of this remedy.

- National Pollutant Discharge Elimination (40 CFR Part 125); includes best available technology
- Standards Applicable to Generators of Hazardous Waste (40 CFR Part 262), treatment residuals generation
- Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, (40 CFR 264.90-101), Subpart F
- Groundwater Monitoring and Recovery Well Requirements (NR 141, NR 181, WAC)
- Requirements and Standards for Pollution Discharge Systems (NR 108, NR 102, NR 104, NR 200, NR 207, NR 218, NR 219, NR 220 WAC).
- Standards for Landfill Cap Design (NR 181, NR 504 WAC); NR 181.48 for "other" facilities
- Standards for Emissions Controls (NR 400-499 WAC)
- Requirements for Collection and Control of Landfill Gas (NR 504, NR 506, NR 508, NR 181 WAC)
- Standards Applicable to Generators of Hazardous Waste (NR 181 WAC)
- Resource Conservation and Recovery Act (RCRA 42 U.S.C. 6924(u), (v) and 6928(h)).

Changes in Exposure Pathways

During the conduct of the RI/FS, the primary exposure pathways of concern evaluated for the MDSL exposure assessment included incidental ingestion of contaminated surface water, ingestion of contaminated fish, and groundwater ingestion. Dermal contact with soils was also considered in this assessment (no direct contact with the waste mass was assumed). The potentially exposed populations included adult and child groundwater users (via drinking water), fishermen and other consumers of potentially contaminated fish, and recreational surface water users who may incidentally ingest water.

The risk assessment concluded that the Site posed a risk to human health through ingestion of contaminated groundwater and, if untreated, the contaminated groundwater would continue to pose risks. The risk assessment considered both soil ingestion and dermal contact pathways for adult populations, but did not take into account the use of the Site by children as the Site is partially fenced. However, dirt bike tracks were found at the Site during site visits subsequent to the RI/FS, indicating that children may have access to the Site. Though incorporated into the RA, institutional controls, such as deed restrictions, have not been implemented at the Site to date. However, due to the access controls at the Site (complete perimeter fencing), it is likely that the onsite exposure pathways are no longer relevant.

There have been no new exposure pathways that would impact the protectiveness of the remedy.

The reasonable worst case hazard index was calculated to be 1.2 for adults, based primarily on the contributions from lead, toluene and 1,1-dichloroethylene. A hazard index of greater than one indicates an unacceptable risk. The worst case hazard index calculated for children at the MDSL Site was 4.0. The cumulative carcinogenic risk for adults and children were calculated to be $4x10^{-4}$ and $1x10^{-3}$ respectively. The NCP established acceptable levels of risk for Superfund sites at between one in ten-thousand and one in one-million excess cancer cases. This translates to a risk range of $1x10^{-4}$ to $1x10^{-6}$.

Changes in Toxicity and Other Contaminant Characteristics

There have been actual or proposed changes in toxicity values since the RA was completed at the MDSL Site. These have namely included the chemicals: TCE, bis(2-ethylhexyl) phthalate, lead, 1,1-DCE, and arsenic. While these changes generally indicate greater toxicity of these chemicals, the protectiveness of the remedy would not be impacted.

Changes in Risk Assessment Methods

The updated water quality criteria integrate the national default freshwater/estuarine fish consumption rate of 17.5 grams/day. This would tend to overestimate the doses for this Site since the baseline risk assessment utilized a fish consumption rate of 6.5 grams/day. EPA also incorporated a new reference dose (RfD) for 1,1-DCE of 0.05 mg/kg-day [2], which is published in the EPA's Integrated Risk Information System Data base (IRIS). These changes in risk assessment methods would not be expected to impact the protectiveness of this remedy.

Expected Progress Toward Meeting RAOs

The remedy has progressed but has not met all remedial action objectives; namely access to the Site has not been limited to the extent specified in the ROD. The implementation of institutional controls including deed, land use, and groundwater use restrictions has not been accomplished.

Question C: *Has any other information come to light that could call into question the protectiveness of the remedy?*

There are no newly identified ecological risks at this Site. Regarding human health, EPA has noted that a subparcel in the southeast portion of the Site is inappropriately zoned as residential, that institutional controls have not been implemented, and that a final decision concerning groundwater

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[2] The previous reference dose (RfD) at the time of the ROD is not legible. Reference doses have been developed by EPA for evaluating the potential or adverse health effects to humans from exposure to chemicals having noncarcinogenic effects. RfDs are estimates of lifetime daily exposure levels for humans, including sensitive individuals.

remediation needs to be finalized.

Technical Assessment Summary

Based on a review of relevant documents, ARARs, risk assumptions, and the results of the site inspection, all portions of the remedy, except for the institutional controls, appear to be functioning as intended by the ROD and related documents. The effectiveness of the remedy tracked through the monitoring program indicate that the MDSL presently does not pose a threat to human health or the environment. The implementation of land use controls such as deed restrictions, will be necessary in order to ensure that the remedy will remain protective in the future. There are Site access controls in place.

The RA for this Site consisted of a Source Control Operable Unit, whose goal was containment rather than to attain groundwater restoration quality standards. The RA consisted of: placement of a clay/soil cap and an active venting system over the fill material to reduce infiltration into the waste mass; installation of a groundwater extraction and treatment system; conduct groundwater, surface water, water budget/ hydrology and wetland monitoring to assess the quality and quantity of area groundwater, surface water, and wetlands; and, impose access and use restrictions. It was anticipated that a second operable unit would focus on the restoration of the groundwater to comply with State and Federal ARARs, and on impacts to the wetlands, Fox River, and the environment. The remedy for the second operable unit was anticipated to define the remediation standards and the restoration time frame of the contaminated aquifer.

All construction activities pursuant to the consent decree have been completed and the RA (groundwater extraction and treatment) is currently in a probationary shutdown. The Site poses no apparent short-term public health hazard. The cap appears to be effectively controlling the infiltration of precipitation into the landfill, thus lessening the potential for contact between the waste mass in the landfill and the shallow-most alluvial aquifer. When the groundwater extraction system is operating, the residual contamination collected and ultimately discharged to the Fox River, meets the NPDES and WPDES limits. No adverse impacts to the wetlands and vegetation have been observed. Post-closure care for the landfill cover, O&M activities and long-term environmental monitoring have been performed by the PRP Trust group pursuant to the January 30, 1992 consent decree and the incorporated RD and RA SOWs.

There are no newly identified ecological risks at this Site. Regarding human health, EPA has noted that a subparcel in the southeast portion of the Site is inappropriately zoned as residential, that institutional controls have not been implemented, and that a final decision concerning groundwater remediation needs to be finalized. The available groundwater monitoring information indicates that benzene concentrations in shallow groundwater at PZ-02 are relatively low and stable post-shutdown of the extraction system. The detected benzene concentrations in well PZ-02 are not likely to pose any immediate risk to public health since the closest residential well is downgradient, but approximately one mile south of the MDSL Site. The location and use of private wells in the area needs to be revisited and updated for possible monitoring to ensure that no public health risks exist from the Site.

With regard to the ICs at the Site, EPA determined that ICS were required to effectuate the RA and protect public health and the environment. At present, there are no deed restrictions pertaining to the MDSL Site property on file at the Waukesha County Register of Deeds. According to Waukesha County GIS maps, the 40-acre parcel (of which 26 acres is occupied by the landfill) was titled to Master Disposal Inc. The current deed record holder is Western Disposal Landfill, Inc. A 0.61 acres subparcel of the property is zoned as residential and is posted as such. The proximity of residential receptors to the landfill may pose future problems, however, Site access controls consist of a continuous 6-foot high Site perimeter fence and three locked and chained gates. The main gate is at the southeast corner of the property and is accessible from West Capitol Drive via an access road.

There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy. All ARARs declared in the ROD are being complied with. As discussed previously, the groundwater extraction and treatment operable unit is an interim remedy to contain the plume of contaminated groundwater while the agencies determined how best to restore the aquifer while protecting the water budget in the wetlands. Because restoration of the aquifer was not a goal of this operable unit, the interim groundwater remedy has not met all "functional"ARARS, specifically National Primary and Secondary Drinking Water Standards and Wisconsin Groundwater Quality Standards. Because a sufficient amount of data have now been collected since the implementation of the RA, it is now possible for EPA to prepare a ROD or ROD Amendment, in consultation with the WDNR, in order to set criteria for groundwater restoration.

There have been no new exposure pathways or newly identified ecological risks at this Site which could affect the protectiveness of the remedy. There have been some changes in risk assessment methods and toxicity characteristics of some of the chemicals as previously discussed, however, the protectiveness of the remedy would not be adversely impacted since the groundwater discharged and the surface water meet the cleanup criteria of the containment OU, which are the federal and state pollution elimination discharge elimination system criteria for the protection of human health and aquatic organisms. There are no established groundwater restoration criteria at present.

The remedy has progressed but has not met all remedial action objectives; namely access to the Site has not been limited to the extent specified in the ROD. The implementation of institutional controls including deed, land use, and groundwater use restrictions has not been accomplished.

Environmental Indicators

An analysis of the environmental indicators with regard to controlled human exposures and controlled groundwater migration was considered. It was concluded that all identified human exposure pathways from contamination at the Site are under control or are below health-based levels for current land use conditions. Human exposure pathways with regard to current groundwater use are likely to be below health-based levels as well based on current groundwater concentrations, the distance from the source to the nearest groundwater receptor, and the actions of natural attenuation. However, human exposure pathways with regard to future land and groundwater use are not controlled due to the absence of deed restrictions to prevent future land and groundwater use.

VIII. Issues

The following issues were identified as a result of this second five-year review:

TABLE 10: ISSUES

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Determine the appropriate decision document (ROD v. ROD amendment) for setting cleanup criteria and the strategy for setting remedial action cleanup criteria for OU2 (groundwater). Consult with WDNR on cleanup criteria	N	Y
Groundwater contaminant trend criteria must be completed to determine the groundwater restoration time frame.	N	Y
Determine feasibility and protectiveness of shutting down the groundwater extraction/treatment system on an extended probationary or permanent basis.	N	Y
Fully assess the status of ICs at the Site using the PRP-prepared IC investigation/study for the Site and determine IC implementation strategy and whether current and future land classifications are appropriate	N	Y
Determine the status of private residential well use and water quality downgradient of the Site.	Y	Y

IX. Recommendations and Follow-up Actions

The following recommendations and follow-up actions in Table 11 are recommended to resolve the issues identified during this second five-year review:

TABLE 11: RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Issue	Recommendations and Follow-up Actions	Party Responsible	Over-sight Agency	Mile-stone Date	Affects Protectiveness (Y/N)	
					Current	Future
Determine the appropriate decision document for setting cleanup criteria and the strategy for setting remedial action cleanup criteria for OU2 (groundwater). Consult with WDNR on cleanup criteria	Discussions with ORC in 8/2005 indicate either a ROD or ROD Amendment is appropriate. Continue review of decision document criteria. Review options for cleanup criteria and discuss with WDNR.	EPA and WDNR	EPA	12/2006	N	Y
Groundwater contaminant trend criteria must be completed to determine the ground water restoration time frame.	Send data format criteria to current PRP consultant so data can be provided to EPA from 2002-2005. EPA contractor will integrate all data and provide analyses to RPM.	EPA and PRPs	EPA	01/2006	N	Y
Determine feasibility and protectiveness of shutting down the groundwater extraction/treatment system on an extended probationary or permanent basis	Review trend analyses as per previous issue and discuss with WDNR.	EPA and WDNR	EPA	6/2006	N	Y
Fully assess the status of ICs at the Site using the PRP-prepared IC study for the Site and determine IC implementation strategy and if current and future land classifications are appropriate	PRP-prepared IC study, submitted 8/2005, indicates no deed restrictions are filed. Meet with ORC to develop strategy and implementation time frame.	EPA and PRPs	EPA	12/2006	N	Y

Issue	Recommendations and Follow-up Actions	Party Responsible	Over-sight Agency	Mile-stone Date	Affects Protectiveness (Y/N)	
					Current	Future
Determine the status of private residential well use and water quality downgradient of the Site.	Have PRPs obtain information from federal, state and county water supply data bases regarding existence and groundwater quality of private wells.	EPA, WDNR, and PRPs	EPA	3/2006	Y	Y

X. Protectiveness Statements

The first operable unit (OU1), was a Source Control Operable Unit prescribing containment of the waste mass with construction of a cap on the Site to prevent infiltration of water through the landfill. This OU was designed to utilize construction measures and effluent limitations to attain location-specific ARARs.

A second OU was deemed necessary since groundwater was believed to be in direct contact with the waste materials. OU2 prescribed controlling the migration of the contaminant plume via a groundwater containment system. Because OU2 was an interim groundwater remedy, attainment of federal/state groundwater quality criteria throughout the aquifer was not its goal, though its effectiveness is compared to federal MCLs and state ESs and PALs. The September 1990 ROD addressed only the first of the two planned operable units for the Site.

OU1 - Source Control

The remedy at OU1 currently protects human health and the environment because the landfill cap has been constructed and maintained according to the requirements and specifications set forth in the 1992 consent decree and all referenced EPA-approved design documents and criteria. The extracted and discharged groundwater meets all ARARs, thereby demonstrating the effectiveness of the waste mass containment system in place. The vegetation and wetlands also show no signs of impact due to Site contaminants. The Site access is restricted by a perimeter fence and three locked gates; however, in order for the remedy to be protective in the long-term, the ICs, which were specified as a part of the remedy in the ROD must be fully implemented. The ICs included but were not limited to Site access and deed restrictions on land and groundwater use, which were to run with the land and bind any persons acquiring title or any legal interest in the property.

OU2 - Groundwater

As discussed, the interim remedy (OU2) has not been assigned criteria in a decision document to assess and enforce its effectiveness. When groundwater is compared to state and federal groundwater quality and drinking water quality criteria, a preliminary sense of the groundwater extraction system's effectiveness can be presented. Though benzene has been detected in excess of state and federal drinking water criteria onsite, no offsite detections in the groundwater downgradient of the Site have been measured. Other contaminants have been measured in the groundwater in excess of groundwater quality criteria. These contaminants would not be expected to be present in downgradient private wells due to the distance of these wells from the Site, the actions of natural attenuation, and the slow movement of groundwater. Hence, though it is currently unlikely that there are exposures to the groundwater which would present a risk to human health or the environment, this has not been confirmed via groundwater monitoring data. Thus, a protectiveness determination of the interim remedy (OU2) cannot be made at this time until groundwater analyses are completed and the closest downgradient private wells are identified and tested, if necessary, for the COCs. It is expected that these collective actions will take approximately four months to complete, at which time a protectiveness determination can be made. In any case, in order for OU2 to be protective in the long-term, the appropriate ICs must be implemented and a plan for monitoring and enforcing ICs must be developed to ensure long-term protectiveness.

Site Protectiveness

The remedial action at OU1 is protective in the short-term. However, because a protectiveness determination cannot be made at this time for OU2 because, though it is unlikely, it is not unequivocally known whether there are exposures to groundwater contaminants downgradient of the Site, a statement on the site-wide protectiveness cannot be made at this time. The Site is not protective in the long-term until ICs are implemented. Further, a plan for monitoring and enforcing the ICs must be developed to ensure long-term protectiveness.

XI. Next Review

The next five year review for the Master Disposal Service Landfill Site is required by September 25, 2010, five years from the date of this review.

Figures

Attachments

Appendices

ATTACHMENT 4

LIST OF DOCUMENTS USED FOR FIVE-YEAR REVIEW

1. ATSDR Health Assessment

2. U.S. Environmental Protection Agency. "Source Control Operable Unit Record of Decision for the Master Service Disposal Landfill". September 26, 1990.

3. U.S. Environmental Protection Agency, Fact Sheet: "Proposed Plan for Cleanup, Master Service Disposal Landfill". July 1990.

4. Camp Dresser & McKee, Inc. "Final Community Relations Plan for the Master Disposal Service Landfill, Waukesha County, WI" for the U.S. EPA. December 1985.

5. CH2M Hill, "Master Disposal Service Landfill Remedial Action Implementation Plan Volume 1, March 1995.

6. CH2M Hill, "Master Disposal Service Landfill Monitoring Plan, prepared for the Master Disposal PRP Trust III, July 1996.

7. CH2M Hill, "Master Disposal Service Landfill Operation and Maintenance Manual, prepared for the Master Disposal PRP Trust III, July 1996.

8. CH2M Hill. "Master Disposal Service Landfill; Agency Review Draft, Two Year Evaluation Report and Summary." May 1999.

9. CH2M Hill. "Master Disposal Service Landfill October 2000 Annual (No. 5) Monitoring Report, April 16, 2001."

10. CH2M Hill. "Master Disposal Service Landfill October 2001 Annual (No. 6) Monitoring Report, May 30, 2002."

11. CH2M Hill. "Master Disposal Service Landfill October 2002 Annual (No. 7) Monitoring Report, November 26, 2003."

12. CH2M Hill. "Master Disposal Service Landfill October 2003 Annual (No. 8) Monitoring Report, March 31, 2004."

13. Earth Technology Corporation. Endangerment Assessment for the Master Disposal Service Landfill (second Submittal),

14. Quarles and Brady LLP. Annual Report for January 30, 1999 through January 30, 2000 Re: United States v. Brake, Clutch and Drum Service, et al. Civil Action Nos. 91C1219 and 91C1388, February 29, 2000.

15. Quarles and Brady LLP. Annual Report for January 30, 2000 through January 30, 2001 Re: United States v. Brake, Clutch and Drum Service, et al. Civil Action Nos. 91C1219 and 91C1388, March 1, 2001.

16. Quarles and Brady LLP. Annual Report for January 30, 2001 through January 30, 2002 Re: United States v. Brake, Clutch and Drum Service, et al. Civil Action Nos. 91C1219 and 91C1388, March 1, 2002.

17. Quarles and Brady LLP. Annual Report for January 30, 2002 through January 30, 2003 Re: United States v. Brake, Clutch and Drum Service, et al. Civil Action Nos. 91C1219 and 91C1388, March 1, 2003.

18. Quarles and Brady LLP. Annual Report for January 30,2003 through January 30, 2004 Re: United States v. Brake, Clutch and Drum Service, et al. Civil Action Nos. 91C1219 and 91C1388, March 1, 2004.

19. Quarles and Brady LLP. Annual Report for January 30, 2004 through January 30, 2005 Re: United States v. Brake, Clutch and Drum Service, et al. Civil Action Nos. 91C1219 and 91C1388, March 1, 2005.

20. "PRP Workplan; Remedial Investigation/Feasibility Study," Master Disposal Service Landfill. Technical Scope of Work. February 21, 1996.

21. U.S. EPA Region V, Administrative Order By Consent, In the Matter of Master Disposal Service Landfill, Respondents, V-W-86-C-007, May 1986.

22. U.S. Environmental Protection Agency "Superfund Preliminary Close-Out Report", Master Disposal Service Landfill. June 19, 1997.

23. U.S. Environmental Protection Agency Consent Decree, United States of America, and the State of Wisconsin v. Brake, Clutch & Drum, et. al.

24. WDNR C.D. Besadny Letter to USEPA, Valdas Adamkus RE: selected Superfund Remedy at the MDSL, Sept. 18, 1990.

25. Roy F. Weston, Letter to Russell Hart from Mark Kleiner regarding Pre-Final Inspection of May 16, 1997, May 29, 1997.

26. STS Consultants, LTD., Letter to EPA RPM Lolita Hill Requesting Modifications to Groundwater Extraction Program at the Master Disposal Service Landfill, Brookfield, Wisconsin, May 7, 2004.

27. STS Consultants, LTD., Letter to EPA RPM Lolita Hill Results of Supplementary Groundwater Monitoring Event, Master Disposal Service Landfill, Brookfield, Wisconsin, July 20, 2004.

28. STS Consultants, LTD.,"Technical Justif cation and Request for a Permanent Shutdown of Groundwater Extraction System and Groundwater Monitoring Plan Modifications, Master Disposal Service Landfill, Brookfield, Wisconsin, May 6, 2005.

29. STS Consultants, LTD.,"Master Disposal Service Landfill 2004 Annual (No. 9) Monitoring Report," March 31, 2005.

ATTACHMENT 9

GROUNDWATER STATISTICAL ANALYSES

ATTACHMENTS

Attachment 1 - Site monitoring between October 1996 - October 1999
Attachment 2 - Site monitoring between January 2000 - July 2005
Attachment 3 - Public notice announcing start of second five-year review
Attachment 4 - List of documents reviewed for five-year review
Attachment 5 - Comprehensive groundwater monitoring data
Attachment 6 - Five-year review inspection checklist
Attachment 7 - Photograph log of April 19, 2005 inspection
Attachment 8 - City and Town of Brookfield contact lists
Attachment 9 - Groundwater statistical analysis

ATTACHMENT 1

TABLE 3 - OCTOBER 1996 -OCTOBER 1999 MONITORING EVENTS

Media Sampled	Wells with PALs or other Regulatory Limit Exceeded	Sampling Frequency	Results
Ground water			
Sand/ gravel Aquifer (A1, A2)	VOCs:(B-1, B-31); Iron: B-1, B-5, B-9, B-31, B-44, B-45, B-47, B-49, B-50, B-53, B-58, B-60, OB-7I, OB-7S, OB-8I; Nickel: B-1, B-9, B-49, OB-7I, OB-7S; Arsenic: B-5, B-45, B-49, OB-7S; Lead: B-31; Thallium: OB-8I	Annually; 4 events for conventional analyses, field analyses, COCs	Benzene exceeded the Wisconsin PALs in 2 wells (B-01, B-31); Iron exceeded PALs and Ess in 15 wells; Nickel exceeded PALs(5 wells) and ES (1 well); Arsenic exceeded PALs in 4 wells; Lead and Thallium exceeded PALs in 1 well.
Niagra Dolomite (A3)	Bis (2-ethylhexyl) phthalate: B-51, B-56; Iron: B-43, B-51, B-56, OB-8D, OB-9D; Manganese: B-43, B-46, OB-8D, OB-9D; Antimony: B-43, B-48, B-56, OB-8D, OB-9D; Cadmium: B-46, B-51; Arsenic: B-48, B-56; Thallium: OB-8D	Quarterly; 9 events for field analyses, TCL/TAL compounds	Bis(2-ethylhexyl) phthalate in 2 wells; Iron exceeded PALs and Ess in 5 wells; Manganese exceeded PALs in 4 wells and Ess (1 well); Antimony exceeded PALs and Ess in 5 wells; Cadmium exceeded the PALs in 1 well and the ES in 1 well; Arsenic exceeded PALs in 2 wells; Thallium exceeded PALs in 1 well
Elevation piezometers and extraction wells		Quarterly; 16 events	This information also showed that the groundwater extraction system effectively capturing the contaminated plume and affects only a very narrow part of the wetlands along the landfill's southern edge. Maintenance of the extractions system and refinements to the groundwater level monitoring program
Landfill Gas	None	Quarterly; 4 events between 10/96-7/97, sampled for benzene, vinyl chloride, methane, and nonmethane organic carbon	Meets air regulations (NESHAP) and WAC Chapter NR 445 criterion.

Surface Water			
1) well manifold discharge point 2) EW-11 3) Pond	None	Monthly; 36 events for field analyses, COCs, conventional analyses, discharge limits, water levels	Meet the substantive requirements of the WPDES program.
Bioassays		Quarterly; 9 events	No exceedance of WPDES limits.
Wetland vegetation surveys		Annually; 4 events 9/96, 9/97, 9/98, 9/99	Composition and structure of wetland plant communities changed in several areas. Areas nearest the extraction wells are now dominated by reed canary grass–a dominant species. A shift towards a monotypic stand with lower plant diversity may be occurring in these areas. Other area communities are more wooded and contain more diverse ground covers. It is not known whether these changes create adverse impacts.

Note: Conventional analyses includes: Ammonia (as N), 5-Day biochemical oxygen demand, phosphorous, Chemical Oxygen demand, total dissolved solids, total suspended solids, temperature, pH, acute toxicity bioassay
Field parameters include: groundwater elevation, pH, Temperature, specific conductance, redox potential

ATTACHMENT 2

TABLE 4 - JANUARY 2000 - JULY 2005 MONITORING EVENTS

Media Sampled	Date Sampled	Sampling Frequency	Result*
Groundwater			
Sand/gravel Aquifer (A1, A2)	10/16-20/00 10/22-25,30/01 10/7-11/02 10/28-30/03 10/18-20/04	Annually since 1/00 (5 events)	VOCs exceeded the Wisconsin PALs during 2 of 3 events but did not exceed ESs
Niagra Dolomite (A3)	1,4,7,10/00 3,4,7,10/01, 1,4,6,10/02 1,4,7,10/03 1,4,7,10/04	Quarterly (20 events)	One constituent exceeded PAL and ES and not attributed to background or lab contamination. Chloromethane exceeded PALs in 4 wells (B-43, B-46, B-51, B-56,OB-8D, OB-9D); Mercury exceeded PALs in 2 wells (B-48, OB-8D);
Elevation	11/99-10/00 11/00-10/01 11/01- 10/02 1/02 -12/03 11/03-12/04 1,4,7,10/00 3,4,7,10/01, 1,4,6,10/02 1,4,7,10/03 1,4,7,10/04	Monthly in A1 and A2 zones Quarterly in A1, A2, and A3 zones	This information also showed that the groundwater extraction system effectively capturing the contaminated plume and affects only a very narrow part of the wetlands along the landfill's southern edge. Maintenance of the extractions system and refinements to the groundwater level monitoring program
1) well manifold discharge point, 2) EW-11 3) the pond.	11/99-10/00 11/00-10/01 11/01-10/02 1/02 -12/03 11/03-12/04	Monthly for water quality parameters and certain organic and metals	No exceedance of WPDES limits.
Landfill Gas	Discontinued as of 1/2000	Annually	Meets air regulations (NESHAP) and WAC Chapter NR 445.
Surface Water			
Chemical	11/99-10/00 11/00-10/01 11/01- 10/02 1/02 -12/03 11/03-12/04	Monthly	Meet the substantive requirements of the WPDES program.
Bioassays	1/18, 2/11, 4/17,7/24/00 7/25-7/27/01 6/30, 8/2/02 7/22,7/24/03	Annually since 1/00	No exceedance of WPDES limits.

Wetland vegetation surveys	Discontinued as of 9/00. Last one performed on 9/1999	Annually	A shift towards a monotypic stand with lower plant diversity may be occurring in areas nearest the extraction wells. In other areas, communities are more wooded and contain more diverse ground cover species.
Landfill Cap Inspection	4/17, 7/24, and 10/16/00; 4/16, 7/25, and 10/22/01; 4/17, 7/16, and 10/11/02; 2/13, 4/16, 7/22 and 10/29/03; 4/04, 7/04, and 10/04	Quarterly; ongoing	

* Results tallied through October 2004 sampling event

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Newsweek list. We are in good company

We need to be very careful about giving credence to such national rankings without understanding the criteria applied.

In this case I believe most people are more interested in achievement in national exams rather than participation in national exams, the narrow focus of the Newsweek study.

To rely on such a flawed ranking and accuse our school district administrators and School Board of "losing sight of the real goal of our schools" is blatantly unfair.

We can certainly always do better and should continuously strive to do so. However, let us give credit where credit is due. The excellent performance of the Elmbrook School District continues to be a major factor in attracting people to our community.

All property owners benefit by the significant increase in property values resulting from that well-deserved reputation.

Rather than unfairly criticize those who produce this excellent education, let us work together with them to make it even better.

Glen R. Allgaier
Brookfield

Status Review to Begin
Master Disposal Service Landfill Superfund Site
Brookfield, Wisconsin

Comments Invited

U.S. Environmental Protection Agency has begun a "five-year" review of the Master Disposal Service Landfill Superfund site located at 19900 W. Capitol Drive (Wisconsin Route 190) in Brookfield. The federal Superfund law requires a review at least every five years at sites where the cleanup is complete or underway, but levels of hazardous waste remain on the site. Agencies conduct this review to make sure the cleanup still protects people and the environment. This is the second such review since construction work was completed in 1997.

Cleanup to contain or remove waste and contaminated soil and ground water began in the mid-90s. The cleanup included:

- construction of a landfill cap made of compacted clay. On the steep eastern side, a thick synthetic membrane and concrete was also included in the cap. The cap was topped off with soil and grass. The cap prevents water from mixing with underlying waste and reduces the movement of contaminants into ground water.
- installation of a gas extraction system to safely vent landfill gases into the air. This system prevents gases from moving underground into nearby buildings.
- pumping out and treating contaminated ground water and discharging the cleaned water into a large pond just west of the landfill. Pumping contaminated water from the ground helps to keep the contamination from spreading farther into the ground water.
- continued testing of ground water from a series of monitoring wells.
- use of fencing, signs and deed restriction to restrict access to contaminated areas.

During the review, the EPA will inspect the landfill to ensure the cap and gas venting system are operating as designed and study ground water samples collected over the past five years. EPA will then prepare a report of its findings that will be announced in the newspaper. A copy of this report will be available for review at the site information repository at the Brookfield Library and on EPA's web site: epa.gov/region5/superfund.

EPA invites you to provide information that you think might be important in this site review. Please contact Sheila Sullivan, remedial project manager, EPA, 77 W. Jackson Blvd., Chicago, IL 60604; (312) 886-5251 or (800) 621-8431 weekdays 9 a.m. - 4:30 p.m., fax: (312) 886-4047, e-mail: sullivan.sheila@epa.gov. Your information will most be valuable to reviewers if received by mid-June.

The five-year review report will be completed this summer. Site-related documents are available for review at the Brookfield Library, 1900 N. Calhoun Road.

ATTACHMENT 4

LIST OF DOCUMENTS USED FOR FIVE-YEAR REVIEW

1. ATSDR Health Assessment

2. U.S. Environmental Protection Agency. "Source Control Operable Unit Record of Decision for the Master Service Disposal Landfill". September 26, 1990.

3. U.S. Environmental Protection Agency. Fact Sheet: "Proposed Plan for Cleanup, Master Service Disposal Landfill". July 1990.

4. Camp Dresser & McKee, Inc. "Final Community Relations Plan for the Master Disposal Service Landfill, Waukesha County, WI" for the U.S. EPA. December 1985.

5. CH2M Hill, "Master Disposal Service Landfill Remedial Action Implementation Plan Volume 1, March 1995.

6. CH2M Hill, "Master Disposal Service Landfill Monitoring Plan, prepared for the Master Disposal PRP Trust III, July 1996.

7. CH2M Hill, "Master Disposal Service Landfill Operation and Maintenance Manual, prepared for the Master Disposal PRP Trust III, July 1996.

8. CH2M Hill. "Master Disposal Service Landfill; Agency Review Draft, Two Year Evaluation Report and Summary." May 1999.

9. CH2M Hill. "Master Disposal Service Landfill October 2000 Annual (No. 5) Monitoring Report, April 16, 2001."

10. CH2M Hill. "Master Disposal Service Landfill October 2001 Annual (No. 6) Monitoring Report, May 30, 2002."

11. CH2M Hill. "Master Disposal Service Landfill October 2002 Annual (No. 7) Monitoring Report, November 26, 2003."

12. CH2M Hill. "Master Disposal Service Landfill October 2003 Annual (No. 8) Monitoring Report, March 31, 2004."

13. Earth Technology Corporation. Endangerment Assessment for the Master Disposal Service Landfill (second Submittal),

14. Quarles and Brady LLP. Annual Report for January 30, 1999 through January 30, 2000 Re: United States v. Brake, Clutch and Drum Service, et al. Civil Action Nos. 91C1219 and 91C1388, February 29, 2000.

15. Quarles and Brady LLP. Annual Report for January 30, 2000 through January 30, 2001 Re: United States v. Brake, Clutch and Drum Service, et al. Civil Action Nos. 91C1219 and 91C1388, March 1, 2001.

16. Quarles and Brady LLP. Annual Report for January 30, 2001 through January 30, 2002 Re: United States v. Brake, Clutch and Drum Service, et al. Civil Action Nos. 91C1219 and 91C1388, March 1, 2002.

17. Quarles and Brady LLP. Annual Report for January 30, 2002 through January 30, 2003 Re: United States v. Brake, Clutch and Drum Service, et al. Civil Action Nos. 91C1219 and 91C1388, March 1, 2003.

18. Quarles and Brady LLP. Annual Report for January 30,2003 through January 30, 2004 Re: United States v. Brake, Clutch and Drum Service, et al. Civil Action Nos. 91C1219 and 91C1388, March 1, 2004.

19. Quarles and Brady LLP. Annual Report for January 30, 2004 through January 30, 2005 Re: United States v. Brake, Clutch and Drum Service, et al. Civil Action Nos. 91C1219 and 91C1388, March 1, 2005.

20. "PRP Workplan; Remedial Investigation/Feasibility Study," Master Disposal Service Landfill, Technical Scope of Work, February 21, 1996.

21. U.S. EPA Region V, Administrative Order By Consent, In the Matter of Master Disposal Service Landfill, Respondents, V-W-86-C-007, May 1986.

22. U.S. Environmental Protection Agency "Superfund Preliminary Close-Out Report", Master Disposal Service Landfill. June 19, 1997.

23. U.S. Environmental Protection Agency Consent Decree, United States of America, and the State of Wisconsin v. Brake, Clutch & Drum, et. al.

24. WDNR C.D. Besadny Letter to USEPA, Valdas Adamkus RE: selected Superfund Remedy at the MDSL, Sept. 18, 1990.

25. Roy F. Weston, Letter to Russell Hart from Mark Kleiner regarding Pre-Final Inspection of May 16, 1997, May 29, 1997.

26. STS Consultants, LTD., Letter to EPA RPM Lolita Hill Requesting Modifications to Groundwater Extraction Program at the Master Disposal Service Landfill, Brookfield, Wisconsin, May 7, 2004.

27. STS Consultants, LTD., Letter to EPA RPM Lolita Hill Results of Supplementary Groundwater Monitoring Event, Master Disposal Service Landfill, Brookfield, Wisconsin, July 20, 2004.

28. STS Consultants, LTD.,"Technical Justification and Request for a Permanent Shutdown of Groundwater Extraction System and Groundwater Monitoring Plan Modifications, Master Disposal Service Landfill, Brookfield, Wisconsin, May 6, 2005.

29. STS Consultants, LTD.,"Master Disposal Service Landfill 2004 Annual (No. 9) Monitoring Report," March 31, 2005.

ATTACHMENT 5

COMPREHENSIVE GROUNDWATER MONITORING DATA

TABLE 1
Groundwater Quality Data
1 of 13

StationId	Parameter	Frequency of PAL Exceedance[1]	Sample Date of PAL Exceedance	Concentration of PAL Exceedance (ug/L)[2,3]	PAL (ug/L)	Frequency of ES Exceedance[1]	Concentration of ES Exceedance (ug/L)	ES (ug/L)
Sand and Gravel Aquifer Unit (A1 and A2 Zones)								
B-01	Benzene	7 of 9	11/25/1996	2	0.5	0 of 8	--	5
			10/1/1997	1J	0.5		--	5
			10/15/1998	2	0.5		--	5
			10/21/1999	1	0.5		--	5
			10/18/2000	2	0.5		-	5
			10/24/2001	1.8	0.5		-	5
			10/10/2002	1.1	0.5		-	5
	Iron	10 of 10	11/25/1996	7,510	150	10 of 10	7510	300
			11/25/1996	10,000	150		10,000	300
			10/1/1997	4,900 J	150		4,900 J	300
			10/21/1999	13,300	150		13,300	300
			10/21/1999	13,100	150		13,100	300
			10/18/2000	13,300	150		13,300	300
			10/24/2001	10,300	150		10,300	300
			10/10/2002	9,280	150		9,280	300
			10/30/2003	6,570	150		6,570	300
			10/19/2004	9,550	150		9,550	300
	Methylene Chloride	1 of 9	10/24/2001	0.62 J	0.5	0 of 8	--	5
	Nickel	6 of 9	11/25/1996	27.4 J	20	0 of 8	--	100
			10/1/1997	22.7 J	20		--	100
			10/15/1998	35 J	20		--	100
			10/21/1999	24 J	20		--	100
			10/18/2000	34	20		--	100
			10/24/2001	22.3 J	20		--	100
	Cadmium	1 of 9	10/10/2002	4.3 J	0.5	0 of 8	--	5
B-05	Arsenic	6 of 7	10/2/1997	23.3	5	0 of 7	--	50
			10/21/1999	26	5		--	50
			10/20/2000	34.7 J	5		--	50
			10/24/2001	29.7	5		--	50
			10/8/2002	30.4	5		--	50
			10/30/2003	27.9	5		--	50
	Iron	8 of 10	11/25/1996	776	150	5 of 10	776	300
			10/2/1997	7,130 J	150		7,130 J	300

TABLE 1
Groundwater Quality Data
2 of 13

StationId	Parameter	Frequency of PAL Exceedance[1]	Sample Date of PAL Exceedance	Concentration of PAL Exceedance (ug/L)[2,3]	PAL (ug/L)	Frequency of ES Exceedance[1]	Concentration of ES Exceedance (ug/L)	ES (ug/L)
			10/21/1999	251	150		--	300
			10/21/1999	314	150		314	300
			10/20/2000	327	150		327	300
			10/24/2001	307	150		307	300
			10/8/2002	252	150		--	300
			10/30/2003	154	150		--	300
B-09	Iron	6 of 6	11/25/1996	4,640	150	5 of 6	4,640	300
			11/25/1996	7,380	150		7,380	300
			10/1/1997	7,940 J	150		7,940 J	300
			10/1/1997	4,800 J	150		4,800 J	300
			10/14/1998	274	150		--	300
			10/14/1998	7,510	150		7,510	300
	Nickel	3 of 3	11/25/1996	52.9	20	0 of 3	--	100
			10/1/1997	41.3	20		--	100
			10/14/1998	50.1	20		--	100
B-31	Benzene	3 of 8	11/25/1996	2	0.5	0 of 8	--	5
			10/1/1997	2	0.5		--	5
			10/21/1999	1	0.5		--	5
	Iron	13 of 13	11/25/1996	2,850	150	11 of 13	2,850	300
			11/25/1996	1,710	150		1,710	300
			10/1/1997	3,440 J	150		3,440 J	300
			10/1/1997	31,900 J	150		31,900 J	300
			10/16/1998	213	150		--	300
			10/16/1998	11,400	150		11,400	300
			10/21/1999	8,870	150		8,870	300
			10/21/1999	12,300	150		12,300	300
			10/20/2000	3,850	150		3,850	300
			10/25/2001	7,880	150		7,880	300
			10/8/2002	180	150		--	300
			10/30/2003	5,530	150		5,530	300
			10/18/2004	5,780	150		5,780	300
	Lead	2 of 8	11/25/1996	6.4	1.5	0 of 8	--	15
			10/16/1998	1.6 J	1.5		--	15

TABLE 1
Groundwater Quality Data
3 of 13

StationId	Parameter	Frequency of PAL Exceedance[1]	Sample Date of PAL Exceedance	Concentration of PAL Exceedance (ug/L)[2,3]	PAL (ug/L)	Frequency of ES Exceedance[1]	Concentration of ES Exceedance (ug/L)	ES (ug/L)
B-44	Iron	11 of 13	11/25/1996	1,100	150	10 of 13	1,100	300
			10/1/1997	1,140 J	150		1,140 J	300
			10/15/1998	1,070	150		1,070	300
			10/15/1998	239	150		--	300
			10/19/1999	485	150		485	300
			10/19/1999	512	150		512	300
			10/18/2000	732	150		732	300
			10/23/2001	606 J	150		606 J	300
			10/8/2002	765	150		765	300
			10/30/2003	1,110	150		1,110	300
			10/20/2004	1,190	150		1,190	300
B-45	Arsenic	9 of 9	11/25/1996	8.7 J	5	0 of 9	--	50
			10/1/1997	9.2 J	5		--	50
			10/15/1998	10	5		--	50
			10/19/1999	6.8 J	5		--	50
			10/18/2000	8.3	5		--	50
			10/23/2001	11.1 J	5		--	50
			10/8/2002	8.7 J	5		--	50
			10/30/2003	7.6	5		--	50
			10/20/2004	10.1	5		--	50
	Iron	3 of 12	11/25/1996	416	150	3 of 12	416	300
			10/1/1997	10,500 J	150		10,500 J	300
			10/15/1998	683	150		683	300
B-47	Iron	12 of 13	11/25/1996	6,170	150	11 of 13	6,170	300
			10/2/1997	647 J	150		647 J	300
			10/2/1997	5,250 J	150		5,250 J	300
			10/16/1998	166	150		--	300
			10/16/1998	12,800	150		12,800	300
			10/21/1999	4,170	150		4,170	300
			10/21/1999	4,160	150		4,160	300
			10/20/2000	4,100	150		4,100	300
			10/30/2001	3,480	150		3,480	300

TABLE 1
Groundwater Quality Data
4 of 13

StationId	Parameter	Frequency of PAL Exceedance[1]	Sample Date of PAL Exceedance	Concentration of PAL Exceedance (ug/L)[2,3]	PAL (ug/L)	Frequency of ES Exceedance[1]	Concentration of ES Exceedance (ug/L)	ES (ug/L)
			10/10/2002	3,450	150		3,450	300
			10/30/2003	2,270	150		2,270	300
			10/18/2004	4,160	150		4,160	300
B-49	Arsenic	8 of 9	11/25/1996	6.7 J	5	0 of 9	--	50
			10/16/1998	5.9 J	5		--	50
			10/21/1999	10.1	5		--	50
			10/20/2000	10.7 J	5		--	50
			10/25/2001	9.6 J	5		--	50
			10/9/2002	13	5		--	50
			10/30/2003	10.2	5		--	50
			10/18/2004	10.7	5		--	50
	Iron	10 of 13	11/25/1996	1,510	150	10 of 13	1,510	300
			10/1/1997	9,800 J	150		9,800 J	300
			10/16/1998	22,500	150		22,500	300
			10/21/1999	909	150		909	300
			10/21/1999	894	150		894	300
			10/20/2000	775	150		775	300
			10/25/2001	1,020	150		1,020	300
			10/9/2002	1,040	150		1,040	300
			10/30/2003	1,060	150		1,060	300
			10/18/2004	988	150		988	300
	Nickel	4 of 9	10/16/1998	26.4	20	0 of 9	--	100
			10/21/1999	26 J	20		--	100
			10/25/2001	25.9 J	20		--	100
			10/18/2004	28.7	20		--	100
B-50	Iron	9 of 12	11/25/1996	2,910	150	9 of 12	2,910	300
			10/2/1997	35,400 J	150		35,400 J	300
			10/15/1998	20,200	150		20,200	300
			10/21/1999	381	150		381	300
			10/21/1999	332	150		332	300
			10/20/2000	390	150		390	300
			10/24/2001	403	150		403	300
			10/8/2002	408	150		408	300

TABLE 1
Groundwater Quality Data
5 of 13

StationId	Parameter	Frequency of PAL Exceedance[1]	Sample Date of PAL Exceedance	Concentration of PAL Exceedance (ug/L)[2,3]	PAL (ug/L)	Frequency of ES Exceedance[1]	Concentration of ES Exceedance (ug/L)	ES (ug/L)
			10/30/2003	324	150		324	300
B-53	Arsenic	1 of 13	10/18/2004	6.19	5	0 of 13	--	50
	Iron	11 of 12	11/25/1996	2,800	150	10 of 12	2,800	300
			11/25/1996	5,610	150		5,610	300
			10/2/1997	551 J	150		551 J	300
			10/2/1997	9,960 J	150		9,960 J	300
			10/16/1998	9,840	150		9,840	300
			10/21/1999	1,940	150		1,940	300
			10/21/1999	1,870	150		1,870	300
			10/20/2000	269	150		--	300
			10/25/2001	755	150		755	300
			10/10/2002	1,950	150		1,950	300
			10/30/2003	3,590	150		3,590	300
B-58	Iron	4 of 12	11/25/1996	668	150	4 of 12	668	300
			10/1/1997	5,480 J	150		5,480 J	300
			10/14/1998	1,020	150		1,020	300
			10/20/1999	1,130	150		1,130	300
B-60	Iron	9 of 13	11/25/1996	2,320	150	9 of 13	2,320	300
			10/1/1997	3,400 J	150		3,400 J	300
			10/14/1998	4,460	150		4,460	300
			10/20/1999	1,920	150		1,920	300
			10/20/1999	1,970	150		1,970	300
			10/17/2000	1,440	150		1,440	300
			10/23/2001	1,460 J	150		1,460 J	300
			10/8/2002	1,800	150		1,800	300
			10/30/2003	2,940	150		2,940	300
			10/19/2004	2,130	150		2,130	300
OB-07I	Iron	25 of 31	10/9/1996	58,700	150	24 of 31	58,700	300
			10/9/1996	3,250	150		3,250	300
			1/7/1997	16,300	150		16,300	300
			4/8/1997	886	150		886	300

TABLE 1
Groundwater Quality Data
6 of 13

StationId	Parameter	Frequency of PAL Exceedance[1]	Sample Date of PAL Exceedance	Concentration of PAL Exceedance (ug/L)[2,3]	PAL (ug/L)	Frequency of ES Exceedance[1]	Concentration of ES Exceedance (ug/L)	ES (ug/L)
			4/8/1997	21,300	150		21,300	300
			7/9/1997	18,900 J	150		18,900 J	300
			10/2/1997	181 J	150		--	300
			10/2/1997	17,200 J	150		17,200 J	300
			1/7/1998	13,700	150		13,700	300
			1/7/1998	1,400	150		1,400	300
			4/15/1998	8,450	150		8,450	300
			4/15/1998	850	150		850	300
			7/15/1998	69,400	150		69,400	300
			10/14/1998	19,300	150		19,300	300
			1/19/1999	25,500	150		25,500	300
			4/21/1999	4,210	150		4,210	300
			7/21/1999	2,610	150		2,610	300
			7/21/1999	2,590	150		2,590	300
			10/20/1999	2,620	150		2,620	300
			10/20/1999	2,650	150		2,650	300
			10/18/2000	2,630	150		2,630	300
			10/24/2001	2,720	150		2,720	300
			10/9/2002	2,830	150		3,690	300
			10/30/2003	2,810	150		2,810	300
			10/18/2004	2,060	150		2,060	300
	Nickel	1 of 17	10/9/1996	78	20	0 of 17	--	100
OB-07S	Arsenic	12 of 18	1/7/1997	5.2 J	5	0 of 18	--	50
			4/8/1997	5.8 J	5		--	50
			7/9/1997	6.1 J	5		--	50
			10/2/1997	8.5 J	5		--	50
			1/7/1998	6.9 J	5		--	50
			4/15/1998	7.4 J	5		--	50
			7/21/1999	11.4	5		--	50
			10/20/1999	16.1	5		--	50
			10/18/2000	13.3	5		--	50
			10/24/2001	11.7	5		--	50
			10/9/2002	15.3	5		--	50
			10/30/2003	11.7	5		--	50

TABLE 1
Groundwater Quality Data
7 of 13

StationId	Parameter	Frequency of PAL Exceedance[1]	Sample Date of PAL Exceedance	Concentration of PAL Exceedance (ug/L)[2,3]	PAL (ug/L)	Frequency of ES Exceedance[1]	Concentration of ES Exceedance (ug/L)	ES (ug/L)
			10/18/2004	9.22	5		--	50
	Iron	27 of 31	10/9/1996	729	150	27 of 31	729	300
			10/9/1996	92,200	150		92,200	300
			1/7/1997	26,100	150		26,100	300
			1/7/1997	489	150		489	300
			4/8/1997	2,410	150		2,410	300
			4/8/1997	15,800	150		15,800	300
			7/9/1997	873 J	150		873 J	300
			7/9/1997	7,570 J	150		7,570 J	300
			10/2/1997	18,500 J	150		18,500 J	300
			10/2/1997	2,500 J	150		2,500 J	300
			1/7/1998	8,440	150		8,440	300
			1/7/1998	2,660	150		2,660	300
			4/15/1998	2,450	150		2,450	300
			4/15/1998	7,980	150		7,980	300
			7/15/1998	13,300	150		13,300	300
			10/14/1998	20,800	150		20,800	300
			1/19/1999	14,800	150		14,800	300
			4/21/1999	4,420	150		4,420	300
			7/21/1999	3,530	150		3,530	300
			7/21/1999	3,510	150		3,510	300
			10/20/1999	3,890	150		3,890	300
			10/20/1999	3,850	150		3,850	300
			10/18/2000	3,460	150		3,460	300
			10/24/2001	4,780	150		4,780	300
			10/9/2002	3,690	150		2,830	300
			10/30/2003	2,860	150		2,860	300
			10/18/2004	2,950	150		2,950	300
	Nickel	1 of 17	10/9/1996	165	20	1 of 17	165	100
OB-08I	Iron	21 of 31	10/8/1996	881	150	21 of 31	881	300
			10/8/1996	7,380	150		7,380	300
			1/6/1997	9,000	150		9,000	300
			4/7/1997	5,280	150		5,280	300
			7/8/1997	6,550 J	150		6,550 J	300

TABLE 1
Groundwater Quality Data
8 of 13

StationId	Parameter	Frequency of PAL Exceedance[1]	Sample Date of PAL Exceedance	Concentration of PAL Exceedance (ug/L)[2,3]	PAL (ug/L)	Frequency of ES Exceedance[1]	Concentration of ES Exceedance (ug/L)	ES (ug/L)
			10/1/1997	3,480 J	150		3,480 J	300
			1/6/1998	5,340 J	150		5,340 J	300
			4/14/1998	5,060	150		5,060	300
			7/15/1998	2,740	150		2,740	300
			10/14/1998	3,840	150		3,840	300
			1/19/1999	4,320	150		4,320	300
			4/21/1999	5,670	150		5,670	300
			7/22/1999	2,330	150		2,330	300
			7/22/1999	2,640	150		2,640	300
			10/20/1999	2,260	150		2,260	300
			10/20/1999	2,830	150		2,830	300
			10/17/2000	2,910	150		2,910	300
			10/23/2001	2,600 J	150		2,600 J	300
			10/8/2002	2,580	150		2,580	300
			10/30/2003	1,810	150		1,810	300
			10/18/2004	1,920	150		1,920	300
	Thallium	1 of 2	1/19/1999	0.83 J	0.4	0 of 2	--	2
	Cadmium	1 of 17	10/8/2002	4.6 J	0.5	0 of 17	--	5
Niagara Dolomite Aquifer Unit (A3 Zone)								
B-43	Chloromethane	1 of 8	10/24/2001	0.57 J	0.3	0 of 8	--	3
	Iron	11 of 13	11/25/1996	2,470	150	10 of 13	2,470	300
			10/2/1997	5,250 J	150		5,250 J	300
			10/2/1997	281 J	150		--	300
			10/14/1998	12,700	150		12,700	300
			7/21/1999	1,580	150		1,580	300
			10/20/1999	1,540	150		1,540	300
			10/18/2000	1,490	150		1,490	300
			10/24/2001	1,660	150		1,660	300
			10/9/2002	1,790	150		1,790	300
			10/30/2003	1,970	150		1,970	300
			10/18/2004	1,460	150		1,460	300
	Manganese	7 of 7	7/21/1999	43.9	25	1 of 7	--	50
			10/20/1999	44.2	25		--	50
			10/18/2000	41.9	25		--	50

TABLE 1
Groundwater Quality Data
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StationId	Parameter	Frequency of PAL Exceedance[1]	Sample Date of PAL Exceedance	Concentration of PAL Exceedance (ug/L)[2,3]	PAL (ug/L)	Frequency of ES Exceedance[1]	Concentration of ES Exceedance (ug/L)	ES (ug/L)
			10/24/2001	44.4	25		--	50
			10/9/2002	47.4	25		--	50
			10/30/2003	48.5	25		--	50
			10/18/2004	53.9	25		53.9	50
	Antimony	2 of 6	10/20/1999	15.4 J	1.2	2 of 6	15.4 J	6
			10/18/2000	14.1	1.2		14.1	6
B-46	Cadmium	1 of 17	7/8/1997	1.2 J	0.5	0 of 17	--	5
	Chloromethane	1 of 17	10/23/2001	1.2 J	0.3	0 of 17	--	3
	Manganese	13 of 18	10/7/1996	25.8	25	0 of 18	--	50
			1/6/1997	30.2	25		--	50
			4/8/1997	29.1	25		--	50
			7/8/1997	33.1	25		--	50
			10/1/1997	25.3 J	25		--	50
			1/19/1999	37.8	25		--	50
			4/21/1999	26.1	25		--	50
			7/21/1999	38.5	25		--	50
			10/19/1999	33.9	25		--	50
			10/18/2000	35.3	25		--	50
			10/23/2001	36.3	25		--	50
			10/30/2003	41.7	25		--	50
			10/18/2004	39.6	25		--	50
B-48	Arsenic	16 of 18	1/7/1997	10.2	5	0 of 18	--	50
			4/8/1997	9.6 J	5		--	50
			7/9/1997	10.8	5		--	50
			10/2/1997	9.9 J	5		--	50
			1/6/1998	7.7 J	5		--	50
			4/14/1998	10.8	5		--	50
			7/16/1998	10.1	5		--	50
			10/16/1998	9.9 J	5		--	50
			1/20/1999	10.8	5		--	50
			4/22/1999	10.7	5		--	50
			7/20/1999	7.2 J	5		--	50
			10/21/1999	10 J	5		--	50

TABLE 1
Groundwater Quality Data
10 of 13

StationId	Parameter	Frequency of PAL Exceedance[1]	Sample Date of PAL Exceedance	Concentration of PAL Exceedance (ug/L)[2,3]	PAL (ug/L)	Frequency of ES Exceedance[1]	Concentration of ES Exceedance (ug/L)	ES (ug/L)
			10/20/2000	10.8 J	5		--	50
			10/25/2001	9.1 J	5		--	50
			10/30/2003	8.6 J	5		--	50
			10/18/2004	8.72	5		--	50
	Mercury	1 of 17	10/20/2000	0.21	0.2	0 of 17	--	2
	Antimony	1 of 17	4/22/1999	12 J	1.2	1 of 17	12 J	6
	Thallium	1 of 17	10/20/2000	0.73 J	0.4	0 of 17	--	2
	Bis(2Ethylhexl)							
B-51	Phthalate	2 of 17	10/24/2001	1.2 J	0.6	1 of 17	--	6
			10/9/2002	230	0.6		230	6
	Cadmium	1 of 17	7/9/1997	24.8	0.5	1 of 17	24.8	5
	Chloromethane	1 of 17	10/24/2001	1.2 J	0.3	0 of 17	--	3
	Iron	8 of 18	4/15/1998	161	150	4 of 17	--	300
			7/22/1999	289	150		--	300
			10/21/1999	324	150		324	300
			10/20/2000	326	150		326	300
			10/24/2001	292	150		--	300
			10/9/2002	308	150		308	300
			10/30/2003	353	150		353	300
			10/18/2004	208	150		--	300
B-56	Arsenic	6 of 18	1/7/1997	5.2 J	5	0 of 18	--	50
			10/22/1999	6 J	5		--	50
			10/17/2000	6.4 J	5		--	50
			10/23/2001	6.7 J	5		--	50
			10/30/2003	6.8	5		--	50
			10/18/2004	10.0	5		--	50
	Bis(2-Ethylhexyl)							
	Phthalate	1 of 17	1/7/1997	57	0.6	1 of 17	57	6
	Chloromethane	1 of 17	10/23/2001	0.67 J	0.3	0 of 17	--	3
	Iron	7 of 18	7/20/1999	602	150	7 of 18	602	300
			10/22/1999	700	150		700	300
			10/17/2000	617	150		617	300
			10/23/2001	711 J	150		711 J	300

TABLE 1
Groundwater Quality Data
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StationId	Parameter	Frequency of PAL Exceedance[1]	Sample Date of PAL Exceedance	Concentration of PAL Exceedance (ug/L)[2,3]	PAL (ug/L)	Frequency of ES Exceedance[1]	Concentration of ES Exceedance (ug/L)	ES (ug/L)
			10/10/2002	646	150		646	300
			10/30/2003	553	150		553	300
			10/18/2004	380	150		380	300
	Antimony	3 of 17	1/6/1998	18.8 J	1.2	3 of 17	18.8 J	6
			4/13/1998	14 J	1.2		14 J	6
			10/14/1998	9.1 J	1.2		9.1 J	6
	Thallium	1 of 17	10/17/2000	0.72 J	0.4	0 of 17	--	2
OB-08D	Bis(2-Ethylhexyl) Phthalate	1 of 17	10/23/2001	1.3 J	0.6	0 of 17	--	6
	Chloromethane	1 of 17	10/23/2001	1.4 J	0.3	0 of 17	--	3
	Iron	10 of 17	4/7/1997	616	150	10 of 17	616	300
			10/1/1997	394 J	150		394 J	300
			1/6/1998	1,290 J	150		1,290 J	300
			4/14/1998	606	150		606	300
			7/22/1999	2,800	150		2,800	300
			10/20/1999	2,820	150		2,820	300
			10/17/2000	2,590	150		2,590	300
			10/23/2001	2,730 J	150		2,730 J	300
			10/9/2002	2,780	150		2,780	300
			10/30/2003	2,090	150		2,090	300
			10/18/2004	1,610	150		1,610	300
	Mercury	1 of 17	10/23/2001	11.6	0.2	1 of 17	11.6	2
	Manganese	18 of 18	10/8/1996	55.2	25	17 of 18	55.2	50
			1/6/1997	34.6	25		--	50
			4/7/1997	76.6	25		76.6	50
			7/8/1997	70	25		70	50
			10/1/1997	66.7 J	25		66.7 J	50
			1/6/1998	67.3	25		67.3	50
			4/14/1998	70.9	25		70.9	50
			7/15/1998	65.3	25		65.3	50
			10/14/1998	69.5	25		69.5	50
			1/19/1999	78	25		78	50
			4/21/1999	54.8	25		54.8	50
			7/22/1999	74.1	25		74.1	50

TABLE 1
Groundwater Quality Data
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StationId	Parameter	Frequency of PAL Exceedance[1]	Sample Date of PAL Exceedance	Concentration of PAL Exceedance (ug/L)[2,3]	PAL (ug/L)	Frequency of ES Exceedance[1]	Concentration of ES Exceedance (ug/L)	ES (ug/L)
			10/20/1999	76.1	25		76.1	50
			10/17/2000	73.6	25		73.6	50
			10/23/2001	76	25		76	50
			10/9/2002	77.1	25		77.1	50
			10/30/2003	60.9	25		60.9	50
			10/18/2004	188	25		188	50
	Antimony	6 of 17	10/1/1997	14.3 J	1.2	6 of 17	14.3 J	6
			1/6/1998	18.2 J	1.2		18.2	6
			10/14/1998	12.5 J	1.2		12.5 J	6
			7/22/1999	18.5 J	1.2		18.5 J	6
			10/20/1999	12.4 J	1.2		12.4 J	6
			10/23/2001	14.2 J	1.2		14.2 J	6
	Thallium	1 of 17	1/19/1999	0.6 J	0.4	0 of 17	--	2
OB-09D	Bis(2-Ethylhexyl) Phthalate	2 of 17	7/8/1997	370	0.6	1 of 17	370	6
			10/30/2003	2.7 J	0.6		--	6
	Chloromethane	1 of 17	10/24/2001	0.64 J	0.3	0 of 17	--	3
	Iron	8 of 18	10/8/1996	164	150	6 of 18	--	300
			4/7/1997	1,760	150		1,760	300
			10/1/1997	627 J	150		627 J	300
			1/7/1998	452	150		452	300
			4/14/1998	1,060	150		1,060	300
			7/22/1999	321	150		321	300
			10/22/1999	349	150		349	300
			10/24/2001	186	150		--	300
			10/9/2002	214	150		214	300
			10/18/2004	256	150		--	300
	Manganese	18 of 18	10/8/1996	352	25	18 of 18	352	50
			1/6/1997	288	25		288	50
			4/7/1997	116	25		116	50
			7/8/1997	376	25		376	50
			10/1/1997	131 J	25		131 J	50
			1/7/1998	134	25		134	50
			4/14/1998	76.6	25		76.6	50

TABLE 1
Groundwater Quality Data
13 of 13

StationId	Parameter	Frequency of PAL Exceedance[1]	Sample Date of PAL Exceedance	Concentration of PAL Exceedance (ug/L)[2,3]	PAL (ug/L)	Frequency of ES Exceedance[1]	Concentration of ES Exceedance (ug/L)	ES (ug/L)
			7/15/1998	184	25		184	50
			10/14/1998	114	25		114	50
			1/19/1999	114	25		114	50
			4/21/1999	63.1	25		63.1	50
			7/22/1999	152	25		152	50
			10/22/1999	139	25		139	50
			10/17/2000	213	25		213	50
			10/24/2001	191	25		191	50
			10/9/2002	226	25		226	50
			10/30/2003	142	25		142	50
			10/18/2004	110	25		110	50
	Antimony	2 of 17	10/14/1998	12.3 J	1.2	2 of 17	12.3 J	6
			10/24/2001	14.7	1.2		14.7 J	6

[1] The first number indicates the number of times a detected parameter has exceeded the PAL or ES at a well. The second number indicates the number of times a parameter has been analyzed at the well.

[2] Only concentrations that were detected or estimated (J) are included in the analysis.

[3] Duplicate sample results were not included in the analysis.

ATTACHMENT 6

FIVE-YEAR REVIEW INSPECTION CHECKLIST

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Five-Year Review Site Inspection Checklist (Template)

I. SITE INFORMATION

Site name: Master Disposal Service Landfill	**Date of inspection:** April 19, 2005
Location and Region: Brookfield Township, Waukesha Co., WI	**EPA ID:** WID980820070
Agency, office, or company leading the five-year review: U.S. EPA	**Weather/temperature:** Warm, Sunny, Windy; Air temp. at ~ 72°F

Remedy Includes: (Check all that apply)

- ☒ Landfill cover/containment
  - ☒ Access controls
  - ☒ Institutional controls
  - ☒ Groundwater pump and treatment
  - ☐ Surface water collection and treatment
  - ☐ Other _____
- ☐ Monitored natural attenuation
  - ☒ Groundwater containment
  - ☐ Vertical barrier walls

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** Master Disposal Service PRP Trust _____ 04/19/05
   Name Title Date
   Interviewed ☒ at site ☒ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☐ Report attached _____

2. **O&M staff** STS Consultants, Terra Engineering _____ 04/19/05
   (Mark Mejac) Name Title Date
   Interviewed ☒ at site ☒ at office ☒ by phone Phone no. _____
   Problems, suggestions; ☐ Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency Town of Brookfield
Contact Richard Czopp — Town Administrator — ____ — 262-796-3788
Name — Title — Date — Phone no.
Problems; suggestions; ☐ Report attached ____

Agency Town of Brookfield Police
Contact Chris Perket — Police Chief — ____ — 262-796-3798
Name — Title — Date — Phone no.
Problems; suggestions; ☐ Report attached ____

Agency Sanitary District No. 4
Contact Terry Heidman — Superintendent — ____ — 262-798-8631
Name — Title — Date — Phone no.
Problems; suggestions; ☐ Report attached ____

Agency Fire Dept., Town of Brookfield
Contact Alex Felde — Chief — ____ — 262-796-3792
Name — Title — Date — Phone no.
Problems; suggestions; ☐ Report attached ____

4. **Other interviews** (optional) ☐ Report attached.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**

☒ O&M manual	☒ Readily available	☐ Up to date	☐ N/A
☒ As-built drawings	☒ Readily available	☐ Up to date	☐ N/A
☒ Maintenance logs	☒ Readily available	☒ Up to date	☐ N/A

Remarks ____

2. **Site-Specific Health and Safety Plan** ☒ Readily available ☐ Up to date ☐ N/A
☐ Contingency plan/emergency response plan ☒ Readily available ☐ Up to date ☐ N/A
Remarks

3. **O&M and OSHA Training Records** ☒ Readily available ☐ Up to date ☐ N/A
Remarks

4. **Permits and Service Agreements**
☐ Air discharge permit ☐ Readily available ☐ Up to date ☒ N/A
☒ Effluent discharge ☐ Readily available ☐ Up to date ☐ N/A
☐ Waste disposal, POTW ☐ Readily available ☐ Up to date ☒ N/A
☐ Other permits ☐ Readily available ☐ Up to date ☐ N/A
Remarks

5. **Gas Generation Records** ☐ Readily available ☐ Up to date ☒ N/A
Remarks

6. **Settlement Monument Records** ☐ Readily available ☐ Up to date ☐ N/A
Remarks

7. **Groundwater Monitoring Records** ☒ Readily available ☒ Up to date ☐ N/A
Remarks

8. **Leachate Extraction Records** ☐ Readily available ☐ Up to date ☒ N/A
Remarks Groundwater Extraction Records are available

9. **Discharge Compliance Records**
☐ Air ☐ Readily available ☐ Up to date ☒ N/A
☒ Water (effluent) ☒ Readily available ☒ Up to date ☐ N/A
Remarks

10. **Daily Access/Security Logs** ☒ Readily available ☒ Up to date ☐ N/A
Remarks No daily access necessary; only during sampling and landfill Cap inspections

IV. O&M COSTS

1. **O&M Organization**
☐ State in-house ☐ Contractor for State
☒ PRP in-house ☒ Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other

2. **O&M Cost Records**

☐ Readily available ☐ Up to date

☐ Funding mechanism/agreement in place

Original O&M cost estimate $144,130. ☒ Breakdown attached (See Report)

Total annual cost by year for review period if available

From 12/2000 (Date) To 12/2001 (Date)	$178,549 (Total cost)	☒ Breakdown attached	
From 12/2001 (Date) To 12/2002 (Date)	$186,229 (Total cost)	☒ Breakdown attached	(See Report)
From 12/2002 (Date) To 12/2003 (Date)	$122,137 (Total cost)	☒ Breakdown attached	
From 12/2003 (Date) To 12/2004 (Date)	$150,563 (Total cost)	☒ Breakdown attached	
From 12/2004 (Date) To 12/2005 (Date)	$74,500. (Total cost)	☒ Breakdown attached	

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: In 2002, Cap repair was added to contractor costs

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map ☒ Gates secured ☐ N/A

Remarks Fencing is in good shape and well maintained

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A

Remarks 1 Sign posted on front gate; No signs posted at intervals around the site.

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☒ Yes ☒ No ☐ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (*e.g.*, self-reporting, drive by) No monitoring of IC's in place

Frequency NONE

Responsible party/agency PRP Group for MDSL Site is the Responsible Party

Contact Rachel Schneider (Name) Attorney for PRP Trust (Title) _____ (Date) _____ (Phone no.)

Reporting is up-to-date ☒ Yes ☐ No ☐ N/A

Reports are verified by the lead agency ☒ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☒ No ☐ N/A

Violations have been reported ☐ Yes ☒ No ☐ N/A

Other problems or suggestions: ☒ Report attached

Site conditions do not belie the fact that land and groundwater use restrictions have not been implemented to date.

Site access control is in-place

2. **Adequacy** ☐ ICs are adequate ☒ ICs are inadequate ☐ N/A

Remarks

Not implemented to date for groundwater and land use restrictions

Zoning not appropriate for portions of site.

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ☒ No vandalism evident

Remarks

2. **Land use changes on site** ☐ N/A

Remarks Zoning indicates Residential use is allowed; No residential use currently

3. **Land use changes off site** ☐ N/A

Remarks Site surrounded by wetlands and environmental Corridors.

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map ☒ Roads adequate ☐ N/A

Remarks Roads accessing Site are in good shape

B. Other Site Conditions

Remarks A sign hangs on the site fence accessible by W. Capitol Drive indicating the southeast portion of property is residentially zoned. While County zoning maps confirm. This it is inappropriate zoning for this area.

VII. LANDFILL COVERS ☐ Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map ☒ Settlement not evident
   Areal extent_____ Depth_____
   Remarks Good Shape

2. **Cracks** ☐ Location shown on site map ☒ Cracking not evident
   Lengths_____ Widths_____ Depths_____
   Remarks_____

3. **Erosion** ☐ Location shown on site map ☒ Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____

4. **Holes** ☐ Location shown on site map ☒ Holes not evident
   Areal extent_____ Depth_____
   Remarks_____

5. **Vegetative Cover** ☒ Grass ☒ Cover properly established ☐ No signs of stress
   ☐ Trees/Shrubs (indicate size and locations on a diagram)
   Remarks_____

6. **Alternative Cover (armored rock, concrete, etc.)** ☒ N/A
   Remarks_____

7. **Bulges** ☐ Location shown on site map ☒ Bulges not evident
   Areal extent_____ Height_____
   Remarks_____

8. **Wet Areas/Water Damage** ☒ Wet areas/water damage not evident
   ☐ Wet areas ☐ Location shown on site map Areal extent_____
   ☐ Ponding ☐ Location shown on site map Areal extent_____
   ☐ Seeps ☐ Location shown on site map Areal extent_____
   ☐ Soft subgrade ☐ Location shown on site map Areal extent_____
   Remarks_____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map ☒ No evidence of slope instability
Areal extent_____
Remarks_____

B. Benches ☐ Applicable ☐ N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map ☐ N/A or okay
Remarks_____

2. **Bench Breached** ☐ Location shown on site map ☐ N/A or okay
Remarks_____

3. **Bench Overtopped** ☐ Location shown on site map ☐ N/A or okay
Remarks_____

C. Letdown Channels ☒ Applicable ☐ N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map ☒ No evidence of settlement
Areal extent_____ Depth_____
Remarks_____

2. **Material Degradation** ☐ Location shown on site map ☒ No evidence of degradation
Material type_____ Areal extent_____
Remarks_____

3. **Erosion** ☐ Location shown on site map ☒ No evidence of erosion
Areal extent_____ Depth_____
Remarks_____

4. **Undercutting** ☐ Location shown on site map ☒ No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____

5. **Obstructions** Type_____ ☒ No obstructions
☐ Location shown on site map Areal extent_____
Size_____
Remarks_____

6. **Excessive Vegetative Growth** Type_____
☐ No evidence of excessive growth
☒ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent_____.
Remarks Some taller weeds and brush along fenceline

D. Cover Penetrations ☒ Applicable ☐ N/A

1. **Gas Vents** ☐ Active ☒ Passive
☒ Properly secured/locked ☒ Functioning ☐ Routinely sampled ☒ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance
☐ N/A
Remarks_____

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☒ N/A
Remarks_____

3. **Monitoring Wells** (within surface area of landfill)
☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____

4. **Leachate Extraction Wells**
☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☒ Needs Maintenance ☐ N/A
Remarks EW-1, EW-3, EW-4, and EW-8 require new level controllers

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☒ N/A
Remarks_____

E. Gas Collection and Treatment ☐ Applicable ☒ N/A

1. **Gas Treatment Facilities**
☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
☐ Good condition ☐ Needs Maintenance
Remarks_____

2. **Gas Collection Wells, Manifolds and Piping**
☒ Good condition ☐ Needs Maintenance
Remarks_____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
☐ Good condition ☐ Needs Maintenance ☒ N/A
Remarks_____

F. Cover Drainage Layer ☒ Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☒ Functioning ☐ N/A
   Remarks Outlet pipes were not able to be closely inspected

2. **Outlet Rock Inspected** ☒ Functioning ☐ N/A
   Remarks

G. Detention/Sedimentation Ponds ☒ Applicable ☐ N/A

1. **Siltation** Areal extent_____ Depth_____ ☐ N/A
   ☒ Siltation not evident
   Remarks

2. **Erosion** Areal extent_____ Depth_____
   ☒ Erosion not evident
   Remarks

3. **Outlet Works** ☒ Functioning ☐ N/A
   Remarks

4. **Dam** ☐ Functioning ☒ N/A
   Remarks

H. Retaining Walls ☐ Applicable ☒ N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
   Remarks

I. Perimeter Ditches/Off-Site Discharge ☒ Applicable ☐ N/A

1. **Siltation** ☐ Location shown on site map ☒ Siltation not evident
   Areal extent_____ Depth_____
   Remarks Some recurring evidence of beaver dam in culvert under access road to Sit.

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
   ☒ Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks

3. **Erosion** ☐ Location shown on site map ☒ Erosion not evident
Areal extent_____ Depth_____
Remarks_____

4. **Discharge Structure** ☒ Functioning ☐ N/A
Remarks_____

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
Areal extent_____ Depth_____
Remarks_____

2. **Performance Monitoring** Type of monitoring_____
☐ Performance not monitored
Frequency_____ ☐ Evidence of breaching
Head differential_____
Remarks_____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☒ Applicable ☐ N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☒ Applicable ☐ N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
☐ Good condition ☐ All required wells properly operating ☒ Needs Maintenance ☐ N/A
Remarks As mentioned, EW-1, EW-3, EW-4, and EW-8 require new water level controllers

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☒ Good condition ☐ Needs Maintenance
Remarks Water level transducers need to be frequently replaced

3. **Spare Parts and Equipment**
☐ Readily available ☐ Good condition ☐ Requires upgrade ☒ Needs to be provided
Remarks Water level transducers

B. Surface Water Collection Structures, Pumps, and Pipelines ☒ Applicable ☐ N/A

1. **Collection Structures, Pumps, and Electrical**
☒ Good condition ☐ Needs Maintenance
Remarks Western on-site pond is collects groundwater discharge for aeration

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☒ Good condition ☐ Needs Maintenance
Remarks_____

3. **Spare Parts and Equipment**
☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
Remarks_____

C. Treatment System ☒ Applicable ☐ N/A

1. **Treatment Train** (Check components that apply)
☐ Metals removal ☐ Oil/water separation ☒ Bioremediation
☐ Air stripping ☐ Carbon adsorbers
☐ Filters_____
☐ Additive (*e.g.*, chelation agent, flocculent)_____
☐ Others_____
☐ Good condition ☐ Needs Maintenance
☒ Sampling ports properly marked and functional
☐ Sampling/maintenance log displayed and up to date
☐ Equipment properly identified
☐ Quantity of groundwater treated annually_____
☐ Quantity of surface water treated annually_____
Remarks_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
☐ N/A ☒ Good condition ☐ Needs Maintenance
Remarks_____

3. **Tanks, Vaults, Storage Vessels**
☒ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
Remarks_____

4. **Discharge Structure and Appurtenances**
☐ N/A ☒ Good condition ☐ Needs Maintenance
Remarks_____

5. **Treatment Building(s)**
☒ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair
☐ Chemicals and equipment properly stored
Remarks_____

6. **Monitoring Wells** (pump and treatment remedy)
☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition
☒ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks_____

D. Monitoring Data

1. Monitoring Data
☒ Is routinely submitted on time ☒ Is of acceptable quality

2. Monitoring data suggests: Cannot be determined at this time; however concentrations are stable.
☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition
☒ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The remedy intended to control and contain the source (waste mass) by a landfill cap (OU-1). A second OU (OU-2) was an interim remedy to contain groundwater; however, OU-2 has never stated groundwater remediation goals in a decision document. The remedy was to include ICs - including site access, groundwater use, and land use restrictions. OU-1 is functioning as intended and has been implemented to the fullest extent. OU-2 requires clean up goals. Groundwater monitoring indicates contaminant concentrations have stabilized. Site access is in place, however deed restrictions have not been filed, to date, in the Waukesha County deed records office. The current land zoning is not appropriate.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

The O+M activities have continued as required in the 1996 O+M Manual for the site, except for the implementation and enforcement of groundwater and land use restrictions. These deed restrictions must be implemented to assure long-term protectiveness of the remedy. Site access has provided short-term protectiveness. Further - the considerable extent of wetlands have been protected due to the O+M activities.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

Currently, the EW-1, , EW-3, EW-4, and EW-8 require repair of water level transducers. This is a frequent maintenance problem which does not appear to be addressed immediately; however, the system operates about 6 months/year. Currently, the groundwater extraction system is in a probationary shut-down period, however, the agencies will not approve a permanent shutdown until it can be demonstrated that a shutdown will not impact groundwater containment.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Several monitoring tasks have been discontinued as per the original monitoring plan. These include land fill gas monitoring and annual wetland vegetation surveys. Further, quarterly groundwater sampling of 4 wells has been reduced to one well and one parameter (benzene). The PRPs have been allowed a probationary shutdown for one year and have requested a permanent shutdown of the extraction system. The agencies have not allowed this until groundwater analyses (trend) can be performed and assessed by the agencies.

ATTACHMENT 7

PHOTOGRAPH LOG OF FIVE-YEAR REVIEW SITE INSPECTION APRIL 19, 2005

Photo 1: From southeast corner, just outside the front gate of the Master Disposal Service Landfill Site looking westward along southern property edge fence line. The main drainage channel to the Fox River is visible.

Photo 2: From southeast corner of Site looking north along and outside the eastern property fence line. The 60-mil HDPE geomembrane overlain with concrete mat is visible outside the fence. This is used to maintain the steep slope and reduce disturbance to the wetland on the right.

Photo 3: From southeast corner of landfill at fence looking eastward onto main drainage channel. Geomembrane and concrete matting are visible in the foreground. Wetlands with bird rookeries continue to the left (north) off the photo frame.

Photo 4: From southeast corner of property looking at garage building located within the small area south of the main drainage channel. The building appeared to store old automotive equipment but is not used regularly.

Photo 5: Looking southward to Extraction Well 1 (EW-1) with West Capitol Drive in the background. The main drainage channel is visible just beyond the fence line.

Photo 6: Looking southwest from the southeastern part of the cap. The first of three electrical panels which operate the transducers for groups of 3 to 4 of the extraction wells. West Capitol Drive is in the far background.

Photo 7: Looking westward along the southern fence line of the landfill. The extraction wells and piezometers are visible in the mid-ground and background along the fence line. Electrical panels No. 2 and 3 are visible along the crest of the landfill.

Photo 8: Looking southeast, two landfill passive gas vents (tall, white casings) are visible in the mid-ground and background of the photo.

Photo 9: Close-up of EW-8. EW-7 is visible near the upper right-hand corner of the photo. Electrical panel No.2 is visible as a white box along the top contour of the landfill.

Photo 10: Composite extraction well discharge area where sampling occurs prior to discharging groundwater to the pond visible beyond the fence.

Photo 11: Looking northward, the western border of the landfill shows the slope. The pond is just left of the visible fence line.

Photo 12: From western landfill slope looking toward western fence line and pond. The discharge point from the pond to the wetlands and into the Fox River is visible just in back of the left edge of the island. One of the gates in the fence line accessing the pond is visible.

Photo 13: Looking at the northeast corner of the landfill toward the upgradient background monitoring wells (B-47, B-48, and B-53) indicated by the yellow stakes in the middle of the photo. One of the gates accessing these wells is visible.

Photo 14: Wetland outside of the northeastern fence line of the landfill. Bird rookeries are visible in the treetops on the right side of the photo background.

Photo 15: Front main gate to the landfill property on the southeast side of the landfill. The gate is accessed via a gravel road off West Capitol Drive. The only posted sign on the fence line is visible on the gate.

Photo 16: Sign uncovered near the southern fence in the garage area of the property. The sign reads: "Keep Out Danger, Heavy Construction Equipment in Use, Site Contains Potentially Hazardous Fill Material" and was apparently used during the remedial action.

ATTACHMENT 8

Town of Brookfield Departments

Town Administrator	Richard Czopp 645 N. Janacek Road Brookfield, WI 53045	(262) 796-3788 (262) 796-0339 *Fax*
Town Clerk	Jane F. Carlson 645 N. Janacek Road Brookfield, WI 53045	(262) 796-3788 (262) 796-0339 *Fax*
Police Chief	Chief Chris Perket 655 N. Janacek Road Brookfield, WI 53045	(262) 796-3798 (262) 796-0706 *Fax*
Fire Chief	Chief Alex Felde 645 N. Janacek Road Brookfield, WI 53045	(262) 796-3792 (262) 796-0410 *Fax*
Department of Public Works Director	Jeffery Golner 655 N. Janacek Road Brookfield, WI 53045	(262) 796-3795
Park & Recreation Director	Chad Brown 645 N. Janacek Road Brookfield, WI 53045	(262) 796-3781 (262) 796-0339 *Fax*
Building Inspector	Gary Lake 645 N. Janacek Road Brookfield, WI 53045	(262) 796-3790 (262) 796-0339 *Fax*
Sanitary District #4	Terry Heidman 645 N. Janacek Road Brookfield, WI 53045	(262) 798-8631
Plumbing Inspector	James Ihn 645 N. Janacek Road Brookfield, WI 53045	(262) 796-3790 (262) 796-0339 *Fax*
Electrical Inspector	William Dwyer 645 N. Janacek Road Brookfield, WI 53045	(262) 796-3791 (262) 796-0339 *Fax*
Deputy Treasurer/Accounting	Joan Hayes 645 N. Janacek Rd. Brookfield, WI 53045	(262) 796-3788 (262) 796-0339 *Fax*
Assessor	Grota Appraisals, LLC	(262) 253-1142 (262) 253-4098 *fax*
Court Clerk	Lisa S. 645 N. Janacek Road Brookfield, WI 53045	(262) 796-3780 (262) 796-0339 *Fax*

City of Brookfield Officials

Mayor	Jeff R. Speaker	(262) 782-9650
Council President	Richard J. Brunner	(262) 789-9877
Assessor	Robert G. Lorier	(262) 796-6649
Zoning & Building Administrator	Larry Goudy	(262) 796-6646
City Attorney	Vincent D. Moschella	(262) 782-9650
City Clerk	Kristine A. Schmidt	(262) 796-6653
City Engineer	Jeffery Chase	(262) 787-3919
Dir. Finance/ Treasurer	Robert W. Scott	(262) 796-6640
Dir. Human Resources	Jim Zwerlein	(262) 796-6642
Dir. of Information Technology	Kevin Beck	(262) 796-6645
Dir. of Community Development	Daniel F. Ertl	(262) 796-6695
Dir. of Administration	Dean R. Marquardt	(262) 782-9650
Economic Development Coordinator	Patrick Drinan	(262) 796-6694
Electrical Inspector	Bruce J. Lehr	(262) 796-6646
Fire Chief	John Dahms	(262) 782-8932
Highway Superintendent	Terry Starns	(262) 782-5029
Dir. Library Services	Edell Schaefer	(262) 782-4140
Municipal Judge	Richard J. Steinberg	(262) 781-1266
Dir. Parks & Recreation	William Kolstad	(262) 796-6675
Plumbing Inspector	Chiquita Jeffery	(262) 796-6646

City of Brookfield
2000 North Calhoun Road
Brookfield, WI 53005
(262) 782-9650
(262) 796-6671 (fax)

Dir. of Public Works	Thomas M. Grisa	(262) 787-3919
Sewer Treatment Plant Manager	Ronald Eifler	(262) 782-0199

ATTACHMENT 9

GROUNDWATER STATISTICAL ANALYSES

Master Disposal

Analyte Name	Well ID	Units*	Trend Test (80% Confidence)		Compare-to-Standard Test (95% Confidence)			Compare-to-Baseline Test (95% Confidence)	
			Result	Slope Estimate (Units*/Yr)	Result	UCL (Units*)	Standard (Units*)	Result	UPL (Units*)
ARSENIC	B-01	ug/L	Downward	-0.21263	Compliance	1.0263	50	NR	
ARSENIC	B-05	ug/L	No Trend	0.36132	Compliance	37.1527	50	NR	
ARSENIC	B-43	ug/L	No Trend	-0.1132	Compliance	0.8508	50	NR	
ARSENIC	B-44	ug/L	No Trend	0	Compliance	0.35	50	NR	
ARSENIC	B-45	ug/L	No Trend	0.17718	Compliance	10.785	50	No Change	11.496
ARSENIC	B-46	ug/L	Upward	0.13309	Compliance	4.3448	50	No Change	3.6125
ARSENIC	B-49	ug/L	Upward	0.5912	Compliance	12.6239	50	No Change	14.0503
ARSENIC	B-50	ug/L	Downward	-0.32787	Compliance	3.2408	50	NR	
ARSENIC	B-58	ug/L	No Trend	0	Compliance	1.3979	50	NR	
ARSENIC	B-60	ug/L	No Trend	-0.10185	Compliance	0.4	50	NR	
ARSENIC	OB-07I	ug/L	No Trend	-0.22362	Compliance	0.68534	50	No Change	2.1227
ARSENIC	OB-07S	ug/L	Upward	0.95461	Compliance	14.9254	50	No Change	9.9658
ARSENIC	OB-08D	ug/L	No Trend	0	Compliance	1.5996	50	Worse	0.7
ARSENIC	OB-08I	ug/L	No Trend	-0.13162	Compliance	1.8174	50	No Change	2.0724
ARSENIC	OB-09D	ug/L	No Trend	0.05602	Compliance	3.3725	50	Worse	2.8997
IRON	B-01	ug/L	No Trend	-231.0373	Exceedance	10840.8966	300	No Change	14589.598
IRON	B-05	ug/L	No Trend	-19.4165	Exceedance	3042.3831	300	NR	

Master Disposal									
Analyte Name	Well ID	Units*	Trend Test (80% Confidence)		Compare-to-Standard Test (95% Confidence)			Compare-to-Baseline Test (95% Confidence)	
			Result	Slope Estimate (Units*/Yr)	Result	UCL (Units*)	Standard (Units*)	Result	UPL (Units*)
IRON	B-43	ug/L	No Trend	-7.5	Exceedance	1972.9181	300	No Change	5719.5319
IRON	B-44	ug/L	Upward	64.5995	Exceedance	1245.8391	300	Worse	1073.0769
IRON	B-45	ug/L	No Trend	-69.1662	Exceedance	313.5769	300	NR	
IRON	B-46	ug/L	No Trend	0	Compliance	36.7748	300	Better	57.7
IRON	B-49	ug/L	No Trend	18.1231	Exceedance	1063.1275	300	No Change	10217.7712
IRON	B-50	ug/L	No Trend	-382.8233	Exceedance	8535.7706	300	NR	
IRON	B-58	ug/L	Downward	-171.1717	Exceedance	592.7512	300	NR	
IRON	B-60	ug/L	Upward	105.562	Exceedance	2828.209	300	No Change	2961.7152
IRON	OB-07I	ug/L	Downward	-1464.3084	Exceedance	3036.2181	300	No Change	35139.89
IRON	OB-07S	ug/L	Downward	-1071.7596	Exceedance	4615.1954	300	No Change	40775.1051
IRON	OB-08D	ug/L	Upward	283.0278	Exceedance	2959.5743	300	Worse	1273.2977
IRON	OB-08I	ug/L	Downward	-123.2	Exceedance	2722.9538	300	No Change	5039.1139
IRON	OB-09D	ug/L	No Trend	-9.6506	Exceedance	391.6755	300	No Change	1718.783
MANGANESE	B-43	ug/L	Upward	1.7633	Exceedance	53.2159	50	NR	
MANGANESE	B-46	ug/L	Upward	2.0514	Compliance	38.4224	50	Worse	35.2099
MANGANESE	OB-08D	ug/L	Upward	2.2927	Exceedance	169.6886	50	Worse	90.1201
MANGANESE	OB-09D	ug/L	No Trend	-5.8103	Exceedance	227.75	50	No Change	438.5783

Master Disposal									
			Trend Test (80% Confidence)		Compare-to-Standard Test (95% Confidence)			Compare-to-Baseline Test (95% Confidence)	
Analyte Name	Well ID	Units*	Result	Slope Estimate (Units*/Yr)	Result	UCL (Units*)	Standard (Units*)	Result	UPL (Units*)
BENZENE	B-01	ug/L	No Trend	-0.12678	Compliance	2.0624	5	NR	
BENZENE	B-05	ug/L	No Trend	0	Compliance	0.5	5	NR	
BENZENE	B-43	ug/L	No Trend	0	Compliance	0.5	5	NR	
BENZENE	B-44	ug/L	No Trend	0	Compliance	0.5	5	NR	
BENZENE	B-45	ug/L	No Trend	0	Compliance	0.5	5	NR	
BENZENE	B-46	ug/L	No Trend	0	Compliance	0.5	5	No Change	0.5
BENZENE	B-49	ug/L	No Trend	0	Compliance	0.5	5	NR	
BENZENE	B-50	ug/L	No Trend	0	Compliance	0.5	5	NR	
BENZENE	B-58	ug/L	No Trend	0	Compliance	0.5	5	NR	
BENZENE	B-60	ug/L	No Trend	0	Compliance	0.5	5	NR	
BENZENE	OB-07I	ug/L	No Trend	0	Compliance	0.5	5	No Change	0.5
BENZENE	OB-07S	ug/L	No Trend	0	Compliance	0.5	5	No Change	0.5
BENZENE	OB-08D	ug/L	No Trend	0	Compliance	0.5	5	No Change	0.5
BENZENE	OB-08I	ug/L	No Trend	0	Compliance	0.5	5	No Change	0.5
BENZENE	OB-09D	ug/L	No Trend	0	Compliance	0.5	5	No Change	0.5
BENZENE	PZ-02	ug/L	No Trend	-0.96453	Exceedance	9.669	5	No Change	10.7371
METHYLENE CHLORIDE	B-01	ug/L	No Trend	0	Compliance	1.0689	5	NR	

Master Disposal									
Analyte Name	Well ID	Units*	Trend Test (80% Confidence)		Compare-to-Standard Test (95% Confidence)			Compare-to-Baseline Test (95% Confidence)	
			Result	Slope Estimate (Units*/Yr)	Result	UCL (Units*)	Standard (Units*)	Result	UPL (Units*)
METHYLENE CHLORIDE	B-05	ug/L	No Trend	0	Compliance	1.3011	5	NR	
METHYLENE CHLORIDE	B-43	ug/L	No Trend	0	Compliance	1	5	NR	
METHYLENE CHLORIDE	B-44	ug/L	No Trend	0	Compliance	1.0981	5	No Change	1
METHYLENE CHLORIDE	B-45	ug/L	No Trend	0	Compliance	1.1619	5	No Change	1
METHYLENE CHLORIDE	B-46	ug/L	No Trend	0	Compliance	1.1891	5	No Change	1
METHYLENE CHLORIDE	B-49	ug/L	No Trend	0	Compliance	1.2673	5	NR	
METHYLENE CHLORIDE	B-50	ug/L	No Trend	0	Compliance	1.1543	5	No Change	1
METHYLENE CHLORIDE	B-58	ug/L	No Trend	0	Compliance	1.0778	5	No Change	1
METHYLENE CHLORIDE	B-60	ug/L	No Trend	0	Compliance	1.1567	5	No Change	1
METHYLENE CHLORIDE	OB-07I	ug/L	No Trend	0	Compliance	1.3106	5	No Change	1
METHYLENE CHLORIDE	OB-07S	ug/L	No Trend	0	Compliance	1.3099	5	No Change	1
METHYLENE CHLORIDE	OB-08D	ug/L	No Trend	0	Compliance	1.1571	5	No Change	1
METHYLENE CHLORIDE	OB-08I	ug/L	No Trend	0	Compliance	1.1555	5	No Change	1
METHYLENE CHLORIDE	OB-09D	ug/L	No Trend	0	Compliance	1	5	No Change	1
LEAD	B-01	ug/L	No Trend	0	Compliance	0.98684	15	NR	
LEAD	B-05	ug/L	No Trend	0	Compliance	0.25	15	NR	
LEAD	B-43	ug/L	No Trend	0	Compliance	0.25	15	NR	

Master Disposal									
Analyte Name	Well ID	Units*	Trend Test (80% Confidence)		Compare-to-Standard Test (95% Confidence)			Compare-to-Baseline Test (95% Confidence)	
			Result	Slope Estimate (Units*/Yr)	Result	UCL (Units*)	Standard (Units*)	Result	UPL (Units*)
LEAD	B-44	ug/L	No Trend	0	Compliance	0.325	15	NR	
LEAD	B-45	ug/L	No Trend	0	Compliance	0.86947	15	NR	
LEAD	B-46	ug/L	No Trend	0	Compliance	0.25	15	No Change	0.8
LEAD	B-49	ug/L	No Trend	0	Compliance	0.325	15	NR	
LEAD	B-50	ug/L	No Trend	0	Compliance	0.325	15	NR	
LEAD	B-58	ug/L	No Trend	-0.076391	Compliance	0.325	15	NR	
LEAD	B-60	ug/L	No Trend	0	Compliance	2.8983	15	No Change	3.41
LEAD	OB-07I	ug/L	No Trend	0	Compliance	0.25	15	No Change	0.3
LEAD	OB-07S	ug/L	No Trend	0	Compliance	0.58534	15	No Change	0.3
LEAD	OB-08D	ug/L	No Trend	0	Compliance	0.2525	15	No Change	0.3
LEAD	OB-08I	ug/L	No Trend	0	Compliance	0.59372	15	No Change	2
LEAD	OB-09D	ug/L	No Trend	0	Compliance	0.25	15	No Change	1.5

NOTES:

means trend coefficient of log-transformed data. Log(2) times its reciprocal is doubling(+)/halving(-) time.

These results obtained on 09/21/2005.

Master Disposal									
			Trend Test (95% Confidence)		Compare-to-Standard Test (95% Confidence)			Compare-to-Baseline Test (95% Confidence)	
Analyte Name	Well ID	Units*	Result	Slope Estimate (Units*/Yr)	Result	UCL (Units*)	Standard (Units*)	Result	UPL (Units*)
ARSENIC	B-01	ug/L	Downward	-0.21263	Compliance	1.0263	50	NR	
ARSENIC	B-05	ug/L	No Trend	0.36132	Compliance	37.1527	50	NR	
ARSENIC	B-43	ug/L	No Trend	-0.1132	Compliance	0.8508	50	NR	
ARSENIC	B-44	ug/L	No Trend	0	Compliance	0.35	50	NR	
ARSENIC	B-45	ug/L	No Trend	0.17718	Compliance	10.785	50	No Change	11.496
ARSENIC	B-46	ug/L	No Trend	0.13309	Compliance	4.3448	50	No Change	3.6125
ARSENIC	B-49	ug/L	Upward	0.5912	Compliance	12.6239	50	No Change	14.0503
ARSENIC	B-50	ug/L	No Trend	-0.32787	Compliance	3.2408	50	NR	
ARSENIC	B-58	ug/L	No Trend	0	Compliance	1.3979	50	NR	
ARSENIC	B-60	ug/L	No Trend	-0.10185	Compliance	0.4	50	NR	
ARSENIC	OB-07I	ug/L	No Trend	-0.22362	Compliance	0.68534	50	No Change	2.1227
ARSENIC	OB-07S	ug/L	No Trend	0.95461	Compliance	14.9254	50	No Change	9.9658
ARSENIC	OB-08D	ug/L	No Trend	0	Compliance	1.5996	50	Worse	0.7
ARSENIC	OB-08I	ug/L	No Trend	-0.13162	Compliance	1.8174	50	No Change	2.0724
ARSENIC	OB-09D	ug/L	No Trend	0.05602	Compliance	3.3725	50	Worse	2.8997
IRON	B-01	ug/L	No Trend	-231.0373	Exceedance	10840.8966	300	No Change	14589.598
IRON	B-05	ug/L	No Trend	-19.4165	Exceedance	3042.3831	300	NR	

Master Disposal									
Analyte Name	Well ID	Units*	Trend Test (95% Confidence)		Compare-to-Standard Test (95% Confidence)			Compare-to-Baseline Test (95% Confidence)	
			Result	Slope Estimate (Units*/Yr)	Result	UCL (Units*)	Standard (Units*)	Result	UPL (Units*)
IRON	B-43	ug/L	No Trend	-7.5	Exceedance	1972.9181	300	No Change	5719.5319
IRON	B-44	ug/L	Upward	64.5995	Exceedance	1245.8391	300	Worse	1073.0769
IRON	B-45	ug/L	No Trend	-69.1662	Exceedance	313.5769	300	NR	
IRON	B-46	ug/L	No Trend	0	Compliance	36.7748	300	Better	57.7
IRON	B-49	ug/L	No Trend	18.1231	Exceedance	1063.1275	300	No Change	10217.7712
IRON	B-50	ug/L	No Trend	-382.8233	Exceedance	8535.7706	300	NR	
IRON	B-58	ug/L	No Trend	-171.1717	Exceedance	592.7512	300	NR	
IRON	B-60	ug/L	No Trend	105.562	Exceedance	2828.209	300	No Change	2961.7152
IRON	OB-07I	ug/L	Downward	-1464.3084	Exceedance	3036.2181	300	No Change	35139.89
IRON	OB-07S	ug/L	Downward	-1071.7596	Exceedance	4615.1954	300	No Change	40775.1051
IRON	OB-08D	ug/L	Upward	283.0278	Exceedance	2959.5743	300	Worse	1273.2977
IRON	OB-08I	ug/L	No Trend	-123.2	Exceedance	2722.9538	300	No Change	5039.1139
IRON	OB-09D	ug/L	No Trend	-9.6506	Exceedance	391.6755	300	No Change	1718.783
MANGANESE	B-43	ug/L	No Trend	1.7633	Exceedance	53.2159	50	NR	
MANGANESE	B-46	ug/L	No Trend	2.0514	Compliance	38.4224	50	Worse	35.2099
MANGANESE	OB-08D	ug/L	Upward	2.2927	Exceedance	169.6886	50	Worse	90.1201
MANGANESE	OB-09D	ug/L	No Trend	-5.8103	Exceedance	227.75	50	No Change	438.5783

Master Disposal									
			Trend Test (95% Confidence)		Compare-to-Standard Test (95% Confidence)			Compare-to-Baseline Test (95% Confidence)	
Analyte Name	Well ID	Units*	Result	Slope Estimate (Units*/Yr)	Result	UCL (Units*)	Standard (Units*)	Result	UPL (Units*)
BENZENE	B-01	ug/L	No Trend	-0.12678	Compliance	2.0624	5	NR	
BENZENE	B-05	ug/L	No Trend	0	Compliance	0.5	5	NR	
BENZENE	B-43	ug/L	No Trend	0	Compliance	0.5	5	NR	
BENZENE	B-44	ug/L	No Trend	0	Compliance	0.5	5	NR	
BENZENE	B-45	ug/L	No Trend	0	Compliance	0.5	5	NR	
BENZENE	B-46	ug/L	No Trend	0	Compliance	0.5	5	No Change	0.5
BENZENE	B-49	ug/L	No Trend	0	Compliance	0.5	5	NR	
BENZENE	B-50	ug/L	No Trend	0	Compliance	0.5	5	NR	
BENZENE	B-58	ug/L	No Trend	0	Compliance	0.5	5	NR	
BENZENE	B-60	ug/L	No Trend	0	Compliance	0.5	5	NR	
BENZENE	OB-07I	ug/L	No Trend	0	Compliance	0.5	5	No Change	0.5
BENZENE	OB-07S	ug/L	No Trend	0	Compliance	0.5	5	No Change	0.5
BENZENE	OB-08D	ug/L	No Trend	0	Compliance	0.5	5	No Change	0.5
BENZENE	OB-08I	ug/L	No Trend	0	Compliance	0.5	5	No Change	0.5
BENZENE	OB-09D	ug/L	No Trend	0	Compliance	0.5	5	No Change	0.5
BENZENE	PZ-02	ug/L	No Trend	-0.96453	Exceedance	9.669	5	No Change	10.7371
METHYLENE CHLORIDE	B-01	ug/L	No Trend	0	Compliance	1.0689	5	NR	

Master Disposal									
Analyte Name	Well ID	Units*	Trend Test (95% Confidence)		Compare-to-Standard Test (95% Confidence)			Compare-to-Baseline Test (95% Confidence)	
			Result	Slope Estimate (Units*/Yr)	Result	UCL (Units*)	Standard (Units*)	Result	UPL (Units*)
METHYLENE CHLORIDE	B-05	ug/L	No Trend	0	Compliance	1.3011	5	NR	
METHYLENE CHLORIDE	B-43	ug/L	No Trend	0	Compliance	1	5	NR	
METHYLENE CHLORIDE	B-44	ug/L	No Trend	0	Compliance	1.0981	5	No Change	1
METHYLENE CHLORIDE	B-45	ug/L	No Trend	0	Compliance	1.1619	5	No Change	1
METHYLENE CHLORIDE	B-46	ug/L	No Trend	0	Compliance	1.1891	5	No Change	1
METHYLENE CHLORIDE	B-49	ug/L	No Trend	0	Compliance	1.2673	5	NR	
METHYLENE CHLORIDE	B-50	ug/L	No Trend	0	Compliance	1.1543	5	No Change	1
METHYLENE CHLORIDE	B-58	ug/L	No Trend	0	Compliance	1.0778	5	No Change	1
METHYLENE CHLORIDE	B-60	ug/L	No Trend	0	Compliance	1.1567	5	No Change	1
METHYLENE CHLORIDE	OB-07I	ug/L	No Trend	0	Compliance	1.3106	5	No Change	1
METHYLENE CHLORIDE	OB-07S	ug/L	No Trend	0	Compliance	1.3099	5	No Change	1
METHYLENE CHLORIDE	OB-08D	ug/L	No Trend	0	Compliance	1.1571	5	No Change	1
METHYLENE CHLORIDE	OB-08I	ug/L	No Trend	0	Compliance	1.1555	5	No Change	1
METHYLENE CHLORIDE	OB-09D	ug/L	No Trend	0	Compliance	1	5	No Change	1
LEAD	B-01	ug/L	No Trend	0	Compliance	0.98684	15	NR	
LEAD	B-05	ug/L	No Trend	0	Compliance	0.25	15	NR	
LEAD	B-43	ug/L	No Trend	0	Compliance	0.25	15	NR	

Master Disposal									
Analyte Name	Well ID	Units*	Trend Test (95% Confidence)		Compare-to-Standard Test (95% Confidence)			Compare-to-Baseline Test (95% Confidence)	
			Result	Slope Estimate (Units*/Yr)	Result	UCL (Units*)	Standard (Units*)	Result	UPL (Units*)
LEAD	B-44	ug/L	No Trend	0	Compliance	0.325	15	NR	
LEAD	B-45	ug/L	No Trend	0	Compliance	0.86947	15	NR	
LEAD	B-46	ug/L	No Trend	0	Compliance	0.25	15	No Change	0.8
LEAD	B-49	ug/L	No Trend	0	Compliance	0.325	15	NR	
LEAD	B-50	ug/L	No Trend	0	Compliance	0.325	15	NR	
LEAD	B-58	ug/L	No Trend	-0.076391	Compliance	0.325	15	NR	
LEAD	B-60	ug/L	No Trend	0	Compliance	2.8983	15	No Change	3.41
LEAD	OB-07I	ug/L	No Trend	0	Compliance	0.25	15	No Change	0.3
LEAD	OB-07S	ug/L	No Trend	0	Compliance	0.58534	15	No Change	0.3
LEAD	OB-08D	ug/L	No Trend	0	Compliance	0.2525	15	No Change	0.3
LEAD	OB-08I	ug/L	No Trend	0	Compliance	0.59372	15	No Change	2
LEAD	OB-09D	ug/L	No Trend	0	Compliance	0.25	15	No Change	1.5

NOTES:

means trend coefficient of log-transformed data. Log(2) times its reciprocal is doubling(+)/halving(-) time.

These results obtained on 09/21/2005.

Master Disposal

Analyte Name	Well ID	Units*	Trend Test (95% Confidence)		Compare-to-Standard Test (95% Confidence)			Compare-to-Baseline Test (95% Confidence)	
			Result	Slope Estimate (Units*/Yr)	Result	UCL (Units*)	Standard (Units*)	Result	UPL (Units*)
ARSENIC	B-01	ug/L	Downward	-0.21263	Compliance	1.0263	50	NR	
ARSENIC	B-05	ug/L	No Trend	0.36132	Compliance	37.1527	50	NR	
ARSENIC	B-43	ug/L	No Trend	-0.1132	Compliance	0.8508	50	NR	
ARSENIC	B-44	ug/L	No Trend	0	Compliance	0.35	50	NR	
ARSENIC	B-45	ug/L	No Trend	0.17718	Compliance	10.785	50	No Change	11.496
ARSENIC	B-46	ug/L	No Trend	0.13309	Compliance	4.3448	50	No Change	3.6125
ARSENIC	B-49	ug/L	Upward	0.5912	Compliance	12.6239	50	No Change	14.0503
ARSENIC	B-50	ug/L	No Trend	-0.32787	Compliance	3.2408	50	NR	
ARSENIC	B-58	ug/L	No Trend	0	Compliance	1.3979	50	NR	
ARSENIC	B-60	ug/L	No Trend	-0.10185	Compliance	0.4	50	NR	
ARSENIC	OB-07I	ug/L	No Trend	-0.22362	Compliance	0.68534	50	No Change	2.1227
ARSENIC	OB-07S	ug/L	No Trend	0.95461	Compliance	14.9254	50	No Change	9.9658
ARSENIC	OB-08D	ug/L	No Trend	0	Compliance	1.5996	50	Worse	0.7
ARSENIC	OB-08I	ug/L	No Trend	-0.13162	Compliance	1.8174	50	No Change	2.0724
ARSENIC	OB-09D	ug/L	No Trend	0.05602	Compliance	3.3725	50	Worse	2.8997
IRON	B-01	ug/L	No Trend	-231.0373	Exceedance	10840.8966	300	No Change	14589.598
IRON	B-05	ug/L	No Trend	-19.4165	Exceedance	3042.3831	300	NR	

Master Disposal									
Analyte Name	Well ID	Units*	Trend Test (95% Confidence)		Compare-to-Standard Test (95% Confidence)			Compare-to-Baseline Test (95% Confidence)	
			Result	Slope Estimate (Units*/Yr)	Result	UCL (Units*)	Standard (Units*)	Result	UPL (Units*)
IRON	B-43	ug/L	No Trend	-7.5	Exceedance	1972.9181	300	No Change	5719.5319
IRON	B-44	ug/L	Upward	64.5995	Exceedance	1245.8391	300	Worse	1073.0769
IRON	B-45	ug/L	No Trend	-69.1662	Exceedance	313.5769	300	NR	
IRON	B-46	ug/L	No Trend	0	Compliance	36.7748	300	Better	57.7
IRON	B-49	ug/L	No Trend	18.1231	Exceedance	1063.1275	300	No Change	10217.7712
IRON	B-50	ug/L	No Trend	-382.8233	Exceedance	8535.7706	300	NR	
IRON	B-58	ug/L	No Trend	-171.1717	Exceedance	592.7512	300	NR	
IRON	B-60	ug/L	No Trend	105.562	Exceedance	2828.209	300	No Change	2961.7152
IRON	OB-07I	ug/L	Downward	-1464.3084	Exceedance	3036.2181	300	No Change	35139.89
IRON	OB-07S	ug/L	Downward	-1071.7596	Exceedance	4615.1954	300	No Change	40775.1051
IRON	OB-08D	ug/L	Upward	283.0278	Exceedance	2959.5743	300	Worse	1273.2977
IRON	OB-08I	ug/L	No Trend	-123.2	Exceedance	2722.9538	300	No Change	5039.1139
IRON	OB-09D	ug/L	No Trend	-9.6506	Exceedance	391.6755	300	No Change	1718.783
MANGANESE	B-43	ug/L	No Trend	1.7633	Exceedance	53.2159	50	NR	
MANGANESE	B-46	ug/L	No Trend	2.0514	Compliance	38.4224	50	Worse	35.2099
MANGANESE	OB-08D	ug/L	Upward	2.2927	Exceedance	169.6886	50	Worse	90.1201
MANGANESE	OB-09D	ug/L	No Trend	-5.8103	Exceedance	227.75	50	No Change	438.5783

APPENDIX 1

MASTER DISPOSAL SERVICE LANDFILL SITE INSTITUTIONAL CONTROLS STUDY

Kimball, Lorrie A.

From: Schneider, Rachel A.
Sent: Tuesday, August 30, 2005 5:36 PM
To: 'Sullivan.Sheila@epamail.epa.gov'
Cc: John Mourand; 'Mejac, Mark'; Herb.pirkey@aosmith.com
Subject: Master Disposal Service Landfill - institutional controls information

Sheila -

As we discussed on Friday, we have obtained a title commitment for the Master Disposal Landfill property. It is attached as "Title Commitment" and the subsequent endorsement correcting the owner of record (Western Disposal, Inc., f/k/a Master Disposal, Inc.) is attached as page 8 of "Ticor Addendum."

I have also attached a copy of the Consent for Access negotiated by EPA with Charlotte Nowacki, on behalf of Western Disposal, Inc. The PRP Group tried for a number of months subsequent to entry of the Consent Decree to negotiate with Ms. Nowacki for purposes of access to and the deed restriction on the landfill property. Ultimately Ms. Nowacki, through her counsel, refused to deal with the Group and EPA got involved. Based on the file information I have reviewed, EPA was similarly unsuccessful until the threat of suit against Ms. Nowacki was imminent. At that juncture the attached "Consent for Access" was agreed to by Ms. Nowacki on behalf of Western Disposal, Inc.

As you can tell from the additional documents included in the attached "Ticor Addendum" the taxes for the property are current and appear to have been paid by Randy Nowacki. I believe Randy Nowacki is the son of John and Charlotte Nowacki, who are both now dead. As further noted in the materials included in the attached "Ticor Addendum," Western Disposal, Inc. was administratively dissolved in 1993.

I am also attaching figures that STS prepared that provide property boundary and other information. The first document, "Figs. 1&2," are a property use map (Fig 1) and property ownership map (Fig 2). The second document, "Fig. 3," is a map of the well locations and this map shows the fence line.

As you know from your site visit, the landfill area is fenced with a single, gated access point. Other than the difficulties with the Nowackis, the performing parties have not encountered problems or concerns related to access or control of the property. There have not been compromises to the fence and/or gate, nor have there been any incidences of unauthorized entry (and no signs of unauthorized entry at the time of site inspections or work over the years). Representatives of the performing parties did have a meeting with Randy Nowacki in 2001. This meeting has been described to me as brief and unproductive. It is my understanding that Mr. Nowacki's position was that the performing parties should pay a significant sum of money for the access, despite the fact that Western Disposal, Inc. was the owner and operator of the landfill facility during its operational lifetime.

I believe this is the extent of responsive information we have available to us at this time. Please do not hesitate to contact me with any questions regarding what has been provided. I will also send you hardcopies of this information.

Title Commitment.pdf (2 MB)
Ticor Addendum.pdf (1 MB)
Consent for Access.pdf (163 KB...
Figs. 1&2.pdf (3 MB)
Fig. 3.pdf (355 KB)

Rachel A. Schneider
Quarles & Brady LLP
411 E Wisconsin Ave, Ste 2040
Milwaukee, WI 53202-4497
(t) 414.277.5829

(f) 414.978.8829
(e) rschneider@quarles.com

Prepared for:
Attn: KAY SUTTON
QUARLES & BRADY, LLP
411 E. WISCONSIN AVE
MILWAUKEE, WI 53202

Inquiries Should be Directed to:
Pamela A. Glynn pamela.glynn@ticortitle.com
Christopher J. Aliota christopher.aliota@ticortitle.com
Joyce J. Brugger joyce.brugger@ticortitle.com

1. Policy or policies to be issued:	**AMOUNT**
(A) ALTA Owner's Policy Proposed insured:	**$1,000.00** (THIS COMMITMENT BEING PREPARED FOR INFORMATIONAL PURPOSES ONLY)
(B) ALTA Loan Policy Proposed insured:	

2. The estate or interest in the land described or referred to in this commitment and covered herein is a **FEE SIMPLE.**

3. Title to said estate or interest in said land is at the effective date hereof held of record by:

   MASTER DISPOSAL SERVICE, INC., A WISCONSIN CORPORATION

4. The land referred to in this Commitment is located in the County of WAUKESHA, State of Wisconsin and described as follows:

   (SEE ATTACHED EXHIBIT)

   SHOWN FOR INFORMATIONAL PURPOSES ONLY
   19980 W. CAPITOL DRIVE, BROOKFIELD, WI 53005

   Tax Key No. BKFT 1027.997

Beginning at a point in the South line of said ¼ Section, 942.83 feet East of the Southwest corner of said ¼ Section; thence Northwesterly 900.59 feet on and along the arc of a curve whose radius point lies to the South and whose radius is 860.00 feet and having a chord of 860.00 feet and a chord bearing of North 60° West to a point; thence West parallel to the South line of said ¼ Section 179.21 feet to a point in the West line of said ¼ Section; thence North 2° 30' 32" East on and along the West line of said ¼ Section, 1211.84 feet to a point; thence North 89° 59' 42" East, 1208.41 feet to a point; thence South 1° 17' 37" West 356.57 feet to a point; thence North 89° 59' 42" East 60.0 feet to a point; thence South 1° 17' 37" West 1284.65 feet to a point on the South line of said Southwest ¼ Section 5; thence West on and along the South line of said ¼ Section 360.00 feet to the place of beginning. Excepting therefrom a 33 foot strip of land along the West line.

PARCEL 2:

That part of the Northwest ¼ of Section 8, Town 7 North, Range 20 East, in the Town of Brookfield, County of Waukesha, State of Wisconsin, bounded and described as follows: Commencing at the Northeast corner of the Northwest ¼ of said Northwest ¼ of Section 8; thence South 1° 01' West on and along the East line of said Northwest ¼ of said Section 8, 33.01 feet to a point; thence West and parallel to the North line of said ¼ Section, 23.00 feet to a point; thence North 1° 01' East 33.01 feet to a point; thence East on and along the North line of said ¼ Section, 23.00 feet to the place of beginning.

PARCEL 3:

That part of the Northeast ¼ of the Northwest ¼ of Section 8, Town 7 North, Range 20 East, in the Town of Brookfield, County of Waukesha, State of Wisconsin, bounded and described as follows: Commencing at the Northwest corner of the Northeast ¼ of the Northwest ¼ of said Section; thence East on and along the North line of said Northwest ¼ Section, 30.00 feet to a point; thence South 1° 01' West 198.10 feet to a point; thence South 69° 13' 28" West 32.30 feet to a point on the West line of said ¼ Section; thence North 1° 01' East on and along the West line of the Northeast ¼ of the Northwest ¼ of said Section, 209.52 feet to the place of beginning. Together with an easement for ingress and egress, over and across the following described premises: That part of the Northeast ¼ of the Northwest ¼ of Section 8, Town 7 North, Range 20 East, in the Town of Brookfield, County of Waukesha, State of Wisconsin, bounded and described as follows: Commencing at the Northwest corner of the Northeast ¼ of the Northwest ¼ of said Section; thence East on and along the North line of said Northwest ¼ Section, 30.00 feet to a point; thence South 1° 01' West, 198.10 feet to the place of beginning of the land to be described; thence continuing South 01° 01' West 26.89 feet to a point on the Northerly line of West Capitol Drive; thence South 69° 13' 28" West on and along the Northerly line of West Capitol Drive, 32.30 feet to a point on the West line of the Northeast ¼ of the Northwest ¼ of said ¼ Section; thence North 01° 01' East on and along said West line 26.92 feet to a point; thence North 69° 13' 28" East, 32.30 feet to the place of beginning.

beginning of the lands to be described; thence continuing due East on and along the North line of said ¼ Section, 106 feet to a point; thence South 1° 01' West and parallel to the West line of the Northeast ¼ of the Northwest ¼ of said ¼ Section, 159 feet more or less to a point that is 25.00 feet Northwesterly and measured radially to the North line of West Capitol Drive; thence Southwesterly on an arc of a curve whose radius point bears Southeasterly and whose radius is 5929.58 feet and concentric to the North line of West Capitol Drive, 114.00 feet more or less to a point; thence North 1° 01' East and parallel to the West line of the Northeast ¼ of the Northwest ¼ of the said ¼ Section, 198.0 feet more or less to the place of beginning.

And also a road easement 30 feet in width adjoining the above property to the West. The purpose of this easement is to give access to the land sold from West Capitol Drive (State Trunk Highway 190). This 30 foot strip starts at the Northwest corner of the Northeast ¼ of the Northwest ¼ of said Section; thence Due East on and along the North line of said ¼ Section, 30.00 feet; thence South along the West line of the property above described and continuing to West Capitol Drive; thence Southwesterly on the Northerly line of West Capitol Drive to the West line of the Northeast ¼ of the Northwest ¼ of Section 8 aforesaid; thence North from Capitol Drive along the said West line of the Northeast ¼ of the Northwest ¼ of Section 8, Town 7 North, Range 20 East to the place of beginning.

FOR INFORMATIONAL PURPOSES ONLY
Tax Key No. BKFT 1027.997.

OFFICE: 00105
ORDER NUMBER: WL-113636
ACCOUNT NUMBER: QUARBRA-000

ESCROW NUMBER: OC -001
CONTRACT NUMBER:

QUARLES & BRADY, LLP
411 E. WISCONSIN AVE.
MILWAUKEE, WI 53202

DATE ORDER RECEIVED: 07/26/05
REFER INQUIRIES TO:
LAKELAND TITLE WEST BEND
(800) 310-6671
AJW

SELLER/OWNER: MASTER DISPOSAL SERVICE LANDFILL
CUSTOMER REFERENCE: MASTER DISPOSAL

POLICIES APPLIED FOR: ALTA OWNERS 1992 $ 15,000.00

****

RESPA LINE	DESCRIPTION OF ITEMS		
1108	OWNER'S POLICY	250.00	
	TOTAL CUSTOMARY SELLER/OWNER CHARGES:		250.00

TOTAL INVOICE:	250.00
MISCELLANEOUS DEBITS:	.00
PAYMENTS/CREDITS:	.00
NET AMOUNT DUE:	250.00

****

ACCOUNT NUMBER: QUARBRA-000 ORDER NUMBER: WL-113636 NET AMOUNT DUE: 250.00

00105: 250.00

THANK YOU FOR PLACING YOUR ORDER WITH LAKELAND TITLE
LAKELAND TITLE WEST BEND

Rev. 4/98

1. Instruments necessary to create the estate or interest to be insured must be properly executed, delivered and duly filed for record.

2. Payment to or for the account of the grantors or mortgagors of the full consideration for the estate or interest or mortgage to be insured.

NONE

Defects, liens, encumbrances, adverse claims or other matters, if any, created, first appearing in the public records or attaching subsequent to the effective date hereof but prior to the date the proposed Insured acquires for value of record the estate or interest or mortgage thereon covered by this Commitment.

2. **Standard Exceptions:**
   (a) Rights or claims of parties in possession not shown by the public records.
   (b) Easements, or claims of easements, not shown by the public records.
   (c) Encroachments, overlaps, boundary line disputes, or other matters which would be disclosed by an accurate survey or inspection of the premises.
   (d) Any lien, or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the public records.
   (e) Any claim of adverse possession or prescriptive easement.

3. **Special Exceptions:**
   (a) Taxes, general and special, for the year 2005 and subsequent years.

   (b) Special taxes or assessments, if any, payable with taxes levied or to be levied for the year 2005 and subsequent years.

   (c) Liens or deferred charges not shown on the tax roll for installations and connections of water and sewer laterals, main and service pipes, and charges for water, sewer and electric service, if any.

   (d) Title to any equipment, fixtures, appliances, tanks, machinery, or installations, except such as is finally determined to be part of the insured premises, determination of which shall not be part of the obligation of the Company.

   (e) Coverage pursuant to the terms and conditions of this commitment is subject to the issuance by the Company of a commitment or policy for the full value of the property and payment of all title charges.

   (f) Right to a lien for unpaid commission, if any, in favor of any real estate broker for the property, pursuant to section 779.32, Wis. Stats. This Exception will be removed on receipt by the Company of a satisfactory affidavit of the present owner that no such commissions are owed, or that all commissions will be paid at closing.

   No broker lien or notice of intent to file lien has been recorded as of the effective date of this commitment to insure.

   NOTE: This exception may be removed: (1) upon receipt of broker lien affidavit from both seller and purchaser which show that no commissions are due, or (2) buyer and seller affidavit plus waivers of lien rights signed by all identified brokers.

   (g) Any lien or right to a lien for cleanup of hazardous waste pursuant to State or Federal Law.

(CONTINUED)

(i) Public or private rights, if any, in such portion of the subject premises as may be presently used, laid out or dedicated in any manner whatsoever, for road purposes.

(j) Easement set forth in Trustees Deed dated February 8, 1966 and recorded February 8, 1966 in Volume 1040 of Deeds, page 237 as Document No. 655208.

(k) Limitations as to access set forth in Award of Damages by County Highway Committee dated September 18, 1964 and recorded December 2, 1964 in Volume 999 of Deeds, page 431 as Document No. 625058.

(l) Mortgage, according to the terms and provisions thereof, from Master Disposal, Inc., to First National Bank of Waukesha (now Bank One, Milwaukee, NA, n/k/a JPMorgan Chase Bank, N.A.) to secure the originally stated indebtedness of $13,000.00 and any other amount payable under the terms thereof dated August 24, 1971 and recorded August 31, 1971 in Volume 1139 of Deeds on page 497 as Document No. 795959.

(m) Utility Easement granted by Master Disposal, Inc. to Wisconsin Electric Power Company and Wisconsin Telephone Company, their successors and assigns by an instrument dated September 23, 1966 and recorded October 10, 1966 in Volume 1064 of Deeds, page 28 as Document No. 672192.

(n) Resolution Enlarging the boundaries of Sanitary District No. 4 Town of Brookfield, recorded August 30, 1996 in Reel 2298, Image 1, as Document No. 2153184, together with any assessments, if any, due thereunder.

(o) Rights of others to the use of Easement set forth in description of insured premises, obligations relative to maintenance thereof, and access between insured premises and any public road or highway, except over said Easement.

END

Exception 2(a) of Schedule B-II will be removed only if the Company receives a Construction Work and Tenants Affidavit on a form provided by the Company. If the affidavit shows that there are tenants, Exception 2(a) will be replaced by an exception for the rights of the tenants disclosed by the Affidavit.

Exceptions 2(b), 2(c) and 2(e) of Schedule B-II will be removed only if the Company receives an original survey which (i) has a current date, (ii) is satisfactory to the Company, and (iii) complies with current ALTA/ACSM Minimum Survey Standards or Wisconsin Administrative Code AE-7. If the survey shows matters which affect the title to the property, Exceptions 2(b), 2(c) and 2(e) will be replaced by exceptions describing those matters.

Exception 2(d) of Schedule B-II will be removed only if the Company receives a Construction Work and Tenants Affidavit on a form prepared by the Company and the following is true:
No work done: the Affidavit must establish that there has been no lienable construction work in the previous six months.
Repair work done: if repair work has been done on an existing structure in the last six months, the Affidavit must accurately disclose all parties who have done lienable work in the last six months, and have attached to it original full waivers of lien from each person or company.
New construction: if the property contains a newly-built structure, the Affidavit must incorporate a complete list of all parties who have done lienable work in the last six months, and have attached to it original full waivers of lien from each person or company.
If Exception 2(d) is removed, it may be replaced by the following exception: "Any construction lien claim by a party not shown on the Construction Work and Tenants Affidavit supplied to the Company."

County of _____ } ss

The undersigned, being duly sworn, deposes and says:

That I am the owner (the Owner) of property further described in commitment to insure number WL-113636 (the Property) issued by Ticor Title Insurance Company (the Company), or a partner, officer or member of the Owner with authority to make the representations below.

(Complete one.)

_____ No real estate broker is or will be entitled to a commission by Owner for the purchase or sale of the Property, and there is no contract for the lease or management of the Property under which a commission is presently owed.

_____ The following is an accurate and complete list of all real estate brokers who are or will be entitled to a commission for the purchase or sale of the Property, and/or with whom there is a contract for the lease or management of the Property.

LISTING BROKER	LEASING/MANAGEMENT BROKER
Name: _____	Name: _____
Address: _____	Address: _____
Telephone No.: _____	Telephone No.: _____
Commission owed or to be owed: $_____	Commission owed or to be owed: $_____

Attached hereto is a waiver of lien rights from each broker listed above, or a copy of the closing statement showing that each broker will be paid at closing.

This Affidavit is given to induce the Company to issue its policy or policies of title insurance. The undersigned indemnifies Ticor Title Insurance Company against any loss caused by the existence of any inaccuracies or omissions in the above information known to the undersigned and not disclosed to the Company plus any cost of the enforcement of this indemnification.

Dated this _____ day of _____, 20___.

OWNER _____

By: _____

Its: _____

Subscribed and sworn to before me this _____ day of _____, 20___.

_____

Notary Public, _____ County, Wisconsin

My commission (expires) (is permanent):

_____

County of _____ } ss

The undersigned, being duly sworn, deposes and says:

That I am the purchaser (the Owner) of property further described in commitment to insure number WL-113636 (the Property) issued by Ticor Title Insurance Company (the Company), or a partner, officer or member of the Owner with authority to make the representations below.

(Complete one.)

_____ No real estate broker is or will be entitled to a commission by Owner for the purchase or sale of the Property, and there is no contract for the lease or management of the Property under which a commission is presently owed.

_____ The following is an accurate and complete list of all real estate brokers who are or will be entitled to a commission for the purchase or sale of the Property, and/or with whom there is a contract for the lease or management of the Property.

BUYER BROKER	LEASING/MANAGEMENT BROKER
Name: _____	Name: _____
Address: _____	Address: _____
Telephone No.: _____	Telephone No.: _____
Commission owed or to be owed: $_____	Commission owed or to be owed: $_____

Attached hereto is a waiver of lien rights from each broker listed above, or a copy of the closing statement showing that each broker will be paid at closing.

This Affidavit is given to induce the Company to issue its policy or policies of title insurance. The undersigned indemnifies Ticor Title Insurance Company against any loss caused by the existence of any inaccuracies or omissions in the above information known to the undersigned and not disclosed to the Company plus any cost of the enforcement of this indemnification.

Dated this _____ day of _____, 20___.

OWNER _____

By: _____

Its: _____

Subscribed and sworn to before me this _____ day of _____, 20___.

_____
Notary Public, _____ County, Wisconsin

My commission (expires) (is permanent):

_____

1. I am the Owner of the property (the Property) described in commitment number WL-113636 issued by Ticor Title Insurance Company.

2. **Construction work.** ***(check one box)***

☐ Repair or construction work **has not** been done on the Property in the past six months.

☐ Repair or construction work **has** been done on the Property in the past six months. The total dollar amount of the work is approximately $_____. All of the people who supplied labor or material are listed below. All Lien waivers I collected from these people are stapled to this affidavit.

Type of work	**Contractor name**	**Dollar amount of work**	**Date of work**

3. **Tenants.** The following tenants and renters occupy the Property: ***(check one box)***

☐ There are **no** tenants.

☐ There are tenants, but all have left the Property or **will leave** as of closing.

☐ One or more tenants **will stay** after this sale is closed. Their names are:

_____
_____
_____
_____
_____

I give this affidavit to persuade TICOR TITLE INSURANCE COMPANY to issue its policy of policies of title insurance. I agree to indemnify Ticor Title Insurance Company against loss caused by inaccuracies or omissions in the above information of which I am aware.

Dated this _____day of _____, _____(year).

OWNER

_____
MASTER DISPOSAL SERVICE, INC.

_____

By: _____

Its: _____

Subscribed and sworn to before me this

_____day of _____, _____.

_____

Notary Public _____, County, WI
My commission expires: (expires) (is permanent): _____

Fifty Eight Thousand Dollars

to them in hand paid by the said party of the second part the receipt whereof is hereby confessed and acknowledged, have given, granted, bargained, sold, remised, released, aliened, conveyed and confirmed and by these presents do give, grant, bargain, sell, remise, release, alien, convey and confirm unto the said party of the second part, its heirs and assigns forever, the following described real estate situated in the County of Waukesha and State of Wisconsin, to-wit

This deed is given pursuant to two (2) land contracts entered into between the parties and recorded as documents # 655210 and #732360. To correct errors in the land contract descriptions, the described lands were quit claimed back to grantors herein prior to the execution of this deed. The grantors herein release any interest they reserved for themselves in a 10 foot strip of land, in land contract Document No. 655210.

All that part of the Southwest 1/4 of Section 5, Township 7 North, Range 20 East, in the Town of Brookfield, Waukesha County, State of Wisconsin, bounded and described as follows: Beginning at a point in the South line of said 1/4 Section, 942.83 feet East of the Southwest corner of said 1/4 Section; thence Northwesterly 900.59 feet on and along the arc of a curve whose radius point lies to the South and whose radius is 860.00 feet, and having a chord of 860.00 feet, and a chord bearing of North 60° West to a point; thence West parallel to the South line of said 1/4 Section 179.21 feet to a point in the West line of said 1/4 Section; thence North 2° 30' 32" East on and along the West line of said 1/4 Section, 1211.84 feet to a point; thence North 89° 59' 42" East 1208.41 feet to a point; thence South 1° 17' 37" West 356.57 feet to a point; thence North 89° 59' 42" East 60.0 feet to a point; thence South 1° 17' 37" West 1284.65 feet to a point on the South line of said Southwest 1/4 Section 5; thence West on and along the South line of said 1/4 Section 300.00 feet to the place of beginning. Excepting therefrom a 33 foot strip of land along the West line.

That part of the Northwest 1/4 of Section 8, Township 7 North, Range 20 East, in the Town of Brookfield, Waukesha County, State of Wisconsin, bounded and described as follows: Commencing at the Northeast corner of the Northwest 1/4 of said Northwest 1/4 of Section 8; thence South 1° 01' West on and along the East line of said Northwest 1/4 of said Section 8, 33.01 feet to a point; thence West and parallel to the North line of said 1/4 Section 23.00 feet to a point; thence North 1° 01' East 33.01 feet to a point; thence East on and along the North line of said 1/4 Section 23.00 feet to the place of beginning

That part of the Northeast 1/4 of the Northwest 1/4 of Section 8, Township 7 North, Range 20 East, in the Town of Brookfield, Waukesha County, State of Wisconsin, bounded and described as follows: Commencing at the Northwest corner of the Northeast 1/4 of the Northwest 1/4 of said Section; thence East on and along the North line of said Northwest 1/4 Section, 30.00 feet to a point; thence South 1° 01' West 198.10 feet to a point; thence South 69° 13' 28" West

- continued -

Together with all and singular the hereditaments and appurtenances thereunto belonging or in any wise appertaining; and all the estate, right, title, interest, claim or demand whatsoever, of the said part ies of the first part, either in law or equity, either in possession or expectancy of, in and to the above bargained premises, and their hereditaments and appurtenances.

To Have and to Hold the said premises as above described with the hereditaments and appurtenances, unto the said part y of the second part, and to its heirs and assigns FOREVER.

grantees herein subsequent to the execution of the land contracts mentioned and that the above bargained premises in the quiet and peaceable possession of the said part y of the second part, its heirs and assigns, against all and every person or persons lawfully claiming the whole or any part thereof, will forever WARRANT AND DEFEND.

In Witness Whereof, the said part ies of the first part ha ve hereunto set their hand s and seal s this 24th day of August, A. D. 19 71.

SIGNED AND SEALED IN PRESENCE OF

Douglas J Faust
DOUGLAS J. FAUST

Donald Faust
DONALD FAUST

Thomas F Finger (SEAL)
Thomas F. Finger

Dolores L. Finger (SEAL)
Dolores L. Finger

(SEAL)

(SEAL)

State of Wisconsin, WAUKESHA County } Personally came before me, this 24th day of August A. D. 19 71.

the above named Thomas F. Finger and Dolores L. Finger, his wife,

to me known to be the person s who executed the foregoing instrument and acknowledged the same.

THIS INSTRUMENT WAS DRAFTED BY
Roy C. Packler

(NOTARY SEAL)

Douglas J Faust
Notary Public. WAUKESHA County, Wis.
My commission expires Jan 11:4-73

32.10 feet to a point on the West line of said 1/4 Section; thence North 1° 01' East on and along the West line of the Northeast 1/4 of the Northwest 1/4 of said Section, 209.52 feet to the place of commencement.

Together with an easement for ingress and egress, over and upon the following described premises:

That part of the Northeast 1/4 of the Northwest 1/4 of Section 8, Township 7 North, Range 20 East, in the Town of Brookfield, Waukesha County, State of Wisconsin, bounded and described as follows: Commencing at the Northwest corner of the Northeast 1/4 of the Northwest 1/4 of said Section; thence East on and along the North line of said Northwest 1/4 Section, 30.00 feet to a point; thence South 1° 01' West 198.10 feet to the place of beginning of the land to be described; thence continuing South 01° 01' West 26.89 feet to a point on the Northerly line of West Capitol Drive; thence South 69° 13' 28" West on and along the Northerly line of West Capitol Drive 32.30 feet to a point on the West line of the Northeast 1/4 of the Northwest 1/4 of said 1/4 Section; thence North 01° 01' East on and along said West line 26.92 feet to a point; thence North 69° 13' 28" East 32.30 feet to the place of beginning.

TAX KEY NO.	TAX ROLL ADDRESS	TAX ROLL NAME
BKFT 1027.997	19980 W CAPITOL DR	MASTER DISPOSAL INC C/O RANDY NOWA

LAND USE: Residential

LAND: $ 31,400.00 IMPROVEMENT: $ 38,700.00 TOTAL: $ 70,100 MARKET VALUE: $ 91,100.00

Tax Roll Name	MASTER DISPOSAL INC C/O RANDY NOWACKI
Tax Roll Address	W68N424 EVERGREEN BLVD
City, State, Zip	CEDARBURG WI 53012

TAX BEFORE LOTTERY CREDIT	1,474.56
SPECIAL ASSMT CHARGE	0.00
MISC CHARGES	0.00
DELINQUENT UTILITIES	0.00
SPECIAL TAX	0.00
LOTTERY CREDIT	0.00

Total:	1,474.56	Paid as of:	01/19/2005
Payments:	1,474.56	As of:	07/13/2005
Outstanding Balance:	0.00		

Legal Description:

PT SW1/4 SEC 5 T7N R20E COM 942.83 FT E OF SW COR NWLY ALG CURVE 900.59 FT W 179.21 FT N2 30'E 1211.84 FT N89 59'E 1208.41 FT S1 17'W 356.57 FT N89 59'E 60.0 FT S1 17'W 1284.65 FT W 360.00 FT TO BGN ALSO PT NW1/4 SEC 8 T7N R20E COM NE COR OF NW1/4 NW1/4 S1 01'W 33.01 FT W 23.00 FTN1 01'E 33.01 FT E 23.00 FT TO BGN ALSO COM NW COR NE1/4 NW1/4 E 30.00 FT S1 01'W 198.10 FT S69 13'W 32.30 FT N1 01'E 209.52 FT TO BGN VOL 1241/672 DEEDS ALSO COM NW COR NE1/4 NW1/4 E 30.00FT THE BGN E 134.50 FT S1 01'W100.00 FT W 28.50 FT S1 01'W 59.0 FT SWLY ALG CURVE 114.00 N1 01'E198.0 FT TO BGN VOL 1040/242 DEEDS EX VOL 1241/662 DEEDS

WESTERN DISPOSAL, INC.

Vital Statistics

Entity ID	1M10706
Registered Effective Date	6/15/1960
Period of Existence	PER
Status	Administratively Dissolved
Status Date	9/14/1993
Entity Type	Domestic Business
Annual Report Requirements	Business Corporations are required to file an Annual Report under s.180.1622 WI Statutes.

Addresses

Registered Agent Office	JOHN Z NOWACKI 1502 ELM LN GRAFTON, WI 53024
Principal Office	1502 ELM LANE GRAFTON, WI 53024 UNITED STATES OF AMERICA

Historical Information

Annual Reports

Year	Reel	Image
1991	008	0730
1990	010	0676
1989	008	2003
1988	007	2253
1987	006	1813
1986	014	1443

Certificates of Newly-elected Officers/Directors

Year	Reel	Image
1986	155	0316

Old Names

Change Date	Name
Current	WESTERN DISPOSAL, INC.
12/10/1985	MASTER DISPOSAL, INC.

Chronology

[illegible]	[illegible]	[illegible]	
12/9/1985	Restored to Good Standing	12/9/1985	
12/10/1985	Amendment	12/10/1985	NAME CHG
8/14/1986	Change Registered Agent/Office	8/14/1986	
4/1/1993	Delinquent	4/1/1993	
7/9/1993	Notice of Administrative Dissolution	7/9/1993	932131746
9/14/1993	Administratively dissolved	9/14/1993	932152349

Attached to and forming a part of the Commitment or Policy of Title Insurance No. WL-113636

IT IS HEREBY STIPULATED that:

The vested title as set forth at at No. 3 of Schedule A of the above numbered title commitment is hereby amended to read:

WESTERN DISPOSAL, INC. (Formerly known as Master Disposal, Inc.), a dissolved corporation

The total liability of the Company under said policy and any endorsement therein shall not exceed, in the aggregate the face amount of said policy and costs which the Company is obligated to pay under the Conditions and Stipulations.

Nothing herein contained shall be construed as extending or changing the effective date of said policy, unless otherwise expressly stated.

This endorsement, when countered signed below by an authorized signatory, is made a part of the commitment or policy and is subject to the Exclusions from Coverage, schedules, conditions and stipulations therein, except as modified by the provisions hereof.

IN WITNESS WHEREOF, the Company has caused its corporate name and seal to be hereunto affixed by its duly authorized officers.

Dated: August 23, 2005
West Bend, WI

TICOR TITLE INSURANCE COMPANY

By: Pamela A. Glynn
Pamela A. Glynn
Executive Vice President

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

via telefacsimile

September 16, 1992

REPLY TO THE ATTENTION OF:

Nancy K. Peterson
Quarles & Brady
411 East Wisconsin Avenue
Milwaukee, Wisconsin 53202

Re: Master Disposal Service Landfill, Brookfield, Wisconsin
Receipt Of Site Owner's Consent For Access To Perform RD/RA

Dear Nancy:

Enclosed please find a copy of the CONSENT FOR ENTRY AND ACCESS form (access form), which was signed by Ms. Charlotte Nowacki, as Vice President and Secretary of Western Disposal, Inc. (f/d/b/a Master Disposal, Inc.). You are receiving a copy of the signed access form the very day I received it (the 16th), although Ms. Nowacki apparently signed the access form on September 14th. Please take notice of the provision in the access form by which Ms. Nowacki is to be informed at least ninety (90) days prior to the need for Ploeckelman Trucking to vacate that area of the site which it leases, or to restrict Ploeckelman's access to the site. The U.S. EPA expects that this notice to Ms. Nowacki could be provided by the settling defendants. However, please consult with the U.S. EPA in advance of the time the settling defendants feel it is appropriate to invoke the 90 day notice which requires that Ploeckelman's access and use of the site needs to be either restricted or terminated. At that time, the U.S. EPA will inform you whether it will notify Ms. Nowacki, or whether the settling defendants should perform this task.

If you have any questions whatsoever, please feel free to phone me at tel. # (312)-886-6731.

Sincerely,

Jerome Kujawa

Jerome Kujawa
Assistant Regional Counsel
U.S. Environmental Protection Agency

Enclosure

cc: Susan Schneider U.S. DOJ (w/o enclosure)
Russ Hart U.S. EPA (w/o enclosure)
Linda Meyer WDNR (w/enclosure)

F&H
FIORENZA & HAYES, S.C.

ATTORNEYS AT LAW
KILDEER COURT BUILDING
5900 West Brown Deer Road
Milwaukee, Wisconsin 53209-1201
414/355-5600
FAX 414/355-8080

September 16, 1992

VIA FACSIMILE

Mr. Jerome Kujawa
Assistant Regional Counsel
U.S. Environmental Protection Agency
Office of Regional Counsel (CS-3T)
77 West Jackson Boulevard
Chicago, IL 60604

RE: Master Disposal Landfill Service Site

Dear Jerry:

Pursuant to our telephone discussion today, I am faxing to you a copy of the Consent for Entry of Access to Property which Charlotte Nowacki signed. The original is being forwarded to you via regular mail.

Very truly yours,

FIORENZA & HAYES, S.C.

Clare L. Fiorenza/jak

Clare L. Fiorenza

CLF:jak
Enclosure
cc: Charlotte E. Nowacki

CONSENT FOR ENTRY AND ACCESS TO PROPERTY
MASTER DISPOSAL LANDFILL SITE, BROOKFIELD, WISCONSIN

Name: Charlotte Nowacki, Vice President and Secretary, Western Disposal, Inc. (f/k/a Master Disposal, Inc.)

Address of Property: 19900 West Capital Drive
Brookfield, Wisconsin

On behalf of Western Disposal, Inc., I, Charlotte Nowacki, Vice President and Secretary of Western Disposal, Inc. consent to officers, employees, and authorized representatives of the United States Environmental Protection Agency (U.S. EPA) and the State of Wisconsin Department of Natural Resources (WDNR), as well as settling defendants in the United States of America and the State of Wisconsin, Department of Natural resources v. Brake, Clutch, & Drum Service, Inc., et al., (E.D. Wis., Civil Action Nos. 91-C-1219 and 91-C-1388) consent decree, and their agents, contractors, and consultants, entering and having continued, unfettered access to the property owned by Western Disposal, Inc., located at 19900 West Capital Drive, Brookfield, Wisconsin, for the following purposes:

Performance of the remedial design and remedial action (RD/RA) pursuant to the United States of America and the State of Wisconsin, Department of Natural Resources v. Brake, Clutch, & Drum Service, Inc., (E.D. Wis., Civil Action Nos. 91-C-1219 and 91-C-1388) consent decree. Such RD/RA will include, but not be limited to:

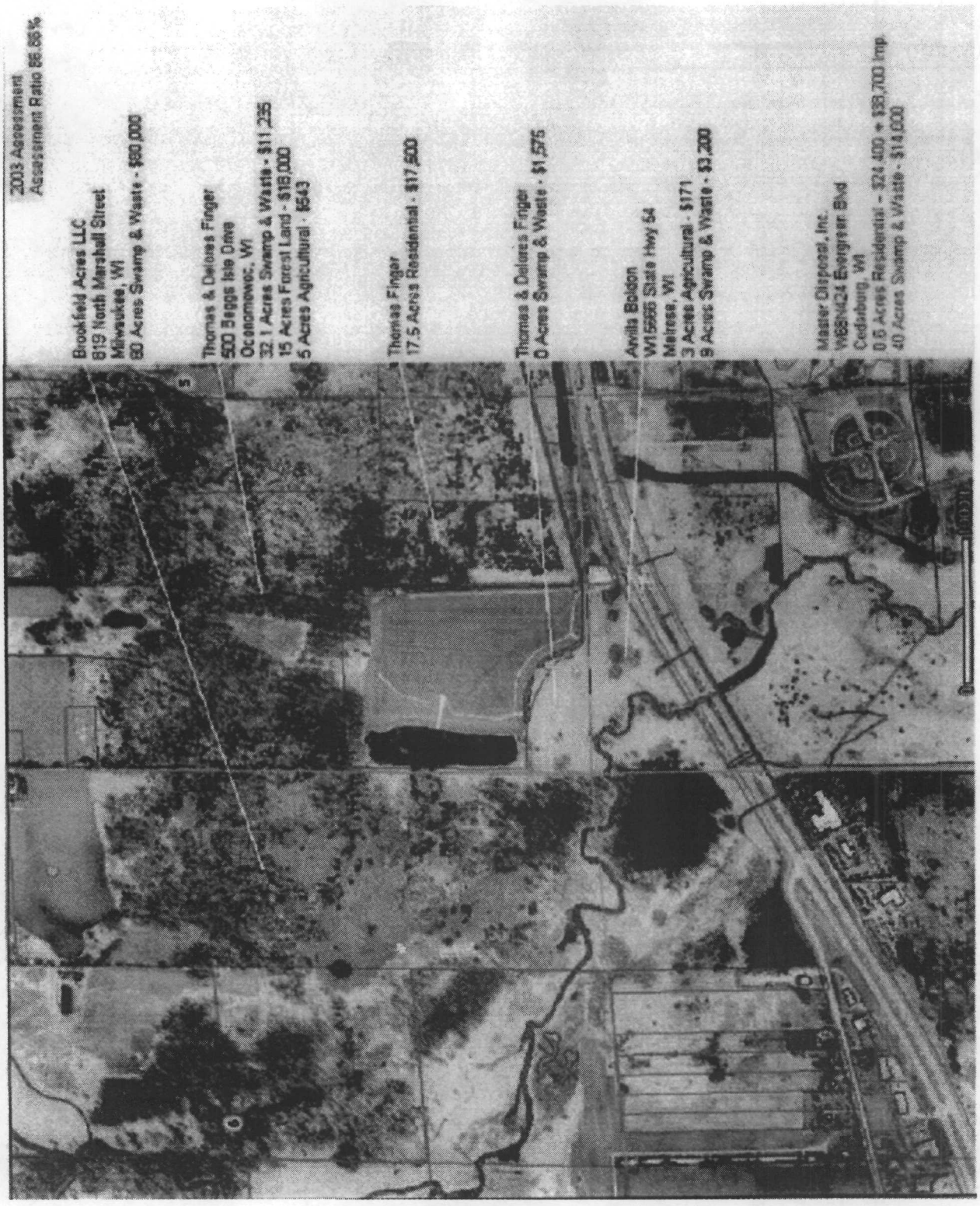
-construction, operation and maintenance of a groundwater extraction and treatment/discharge system;
-construction and maintenance of a clay/soil landfill cap;
-installation of monitoring wells for subsurface investigation; and
-installation of a security fence surrounding the entire Master Disposal Service Landfill Site.

I, Charlotte Nowacki, Vice President and Secretary of Western Disposal, Inc., also consent to restrict use and access to the Master Disposal Service Landfill Site in such a manner to ensure that there will be no interference of any sort, by any person, with construction, operation, maintenance, monitoring, and efficacy of all components and structures and improvements resulting from or relating to the remedial actions taken at the Master Disposal Service Landfill Site. The United States Environmental Protection Agency or its representatives agree to give Charlotte Nowacki, as Vice President and Secretary of Western Disosal, Inc., and Keith Ploeckelman of Ploeckelman Trucking, Inc., at least a ninety (90) day written notice of when the area that is leased to Ploeckelman Trucking, Inc. has to be vacated or its use restricted to perform the remedial design and remedial action set forth in the Consent Decree.

I, Charlotte Nowacki, Vice President and Secretary of Western Disposal, Inc., hereby grant access to the site known as Master Disposal Landfill and certify that this CONSENT FOR ENTRY AND ACCESS TO PROPERTY is signed voluntarily and constitutes my consent and grant of permission for access to the Master Disposal Landfill Site as described above on the condition that Charlotte Nowacki does not incur personal liability under CERCLA solely by reason of the granting of this access. This grant of access does not operate as a release from CERCLA liability, if any such liability exists.

IT IS SO AGREED

Date: 9-14-92 By: Charlotte E. Nowacki

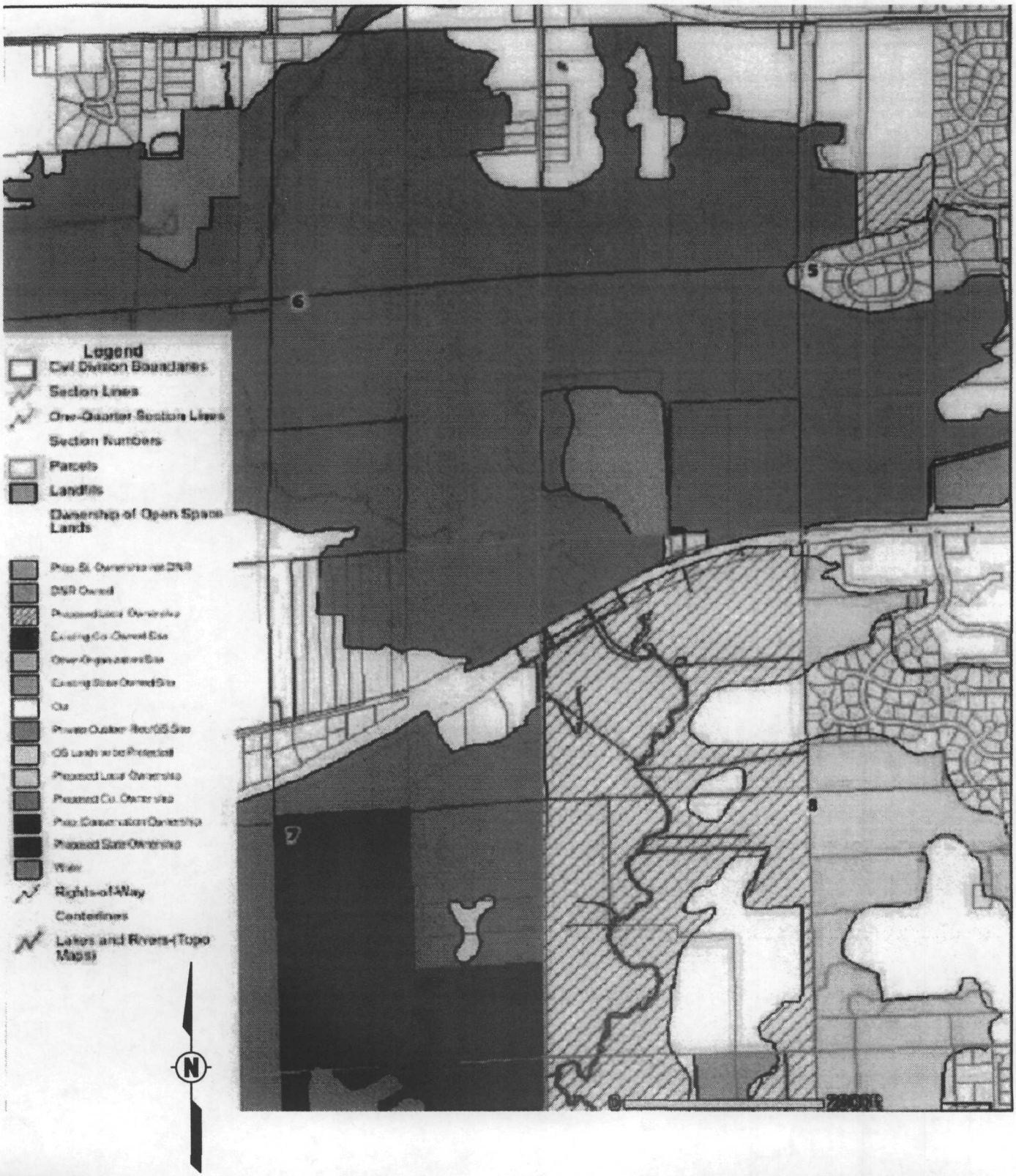


STS CONSULTANTS
11425 W. Lake Park Drive
Milwaukee, WI 53224
414-359-3030
www.stsconsultants.com

PROPERTY OWNERSHIP MAP
MASTER DISPOSAL SERVICE LANDFILL SITE
BROOKFIELD, WISCONSIN

Drawn:	CJH	8/30/2005
Checked:	MMM	8/30/2005
Approved:	MMM	8/30/2005
PROJECT NUMBER	87588XA	
FIGURE NUMBER	2	

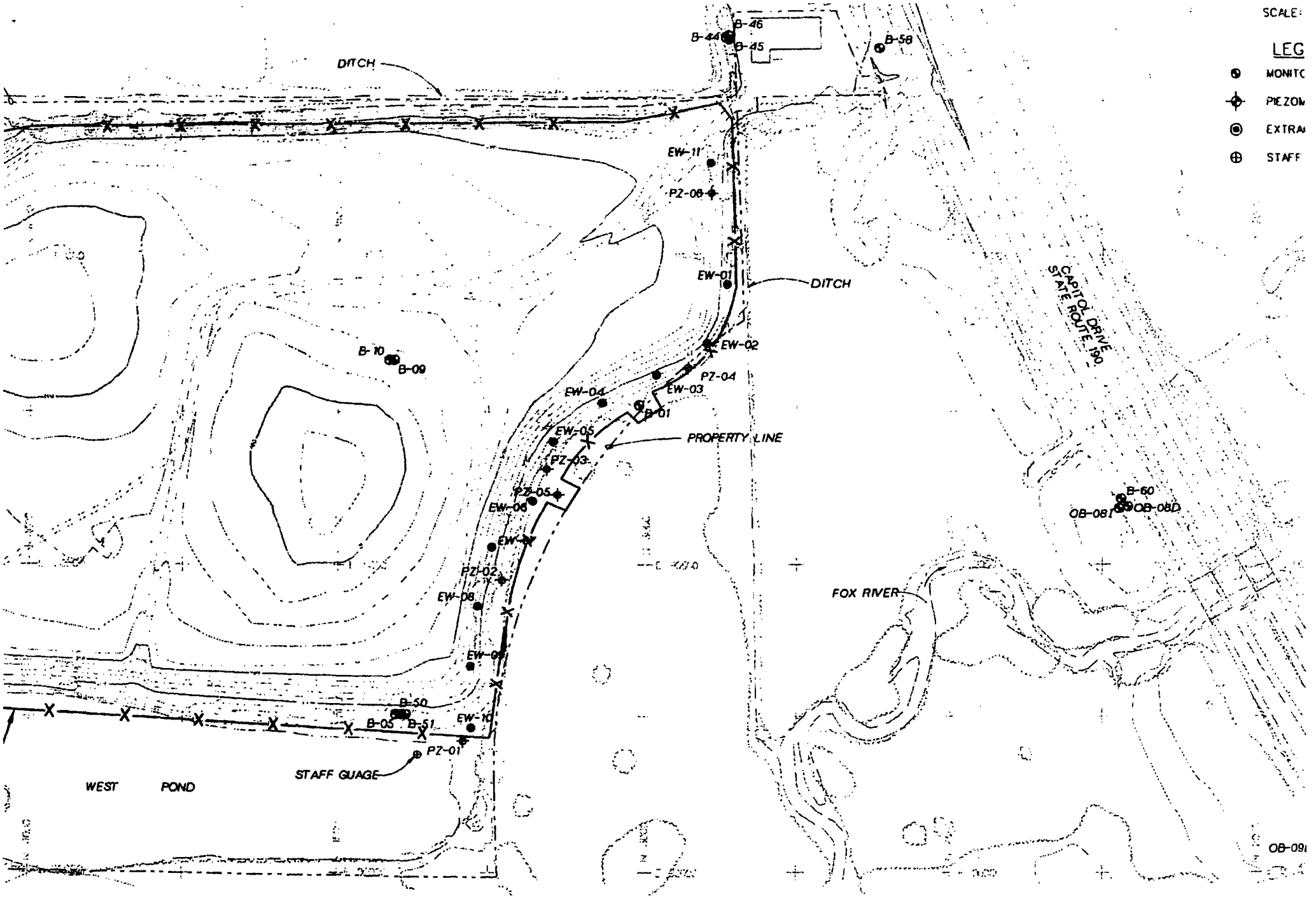
X:\Projects\587588XA\dwg\G87588XA-SITE01.dwg, 8/30/2005 1:31:20 PM, heintz



STS CONSULTANTS
11425 W. Lake Park Drive
Milwaukee, WI 53224
414-359-3030
www.stsconsultants.com

PROPOSED PROPERTY USE MAP
MASTER DISPOSAL SERVICE LANDFILL SITE
BROOKFIELD, WISCONSIN

Drawn :	CJH	8/30/2005
Checked:	MMM	8/30/2005
Approved:	MMM	8/30/2005
PROJECT NUMBER	87588XA	
FIGURE NUMBER	1	



NOTE:

1. COORDINATES OF B-58 ARE N4778, E86937. ACTUAL LOCATION IS APPROXIMATELY 3,000 FEET WEST OF LOCATION SHOWN HERE.